The role of individual and collective affect in fire incident management

Jan Douglas **B.A. (VocEd Hons)**

Submitted in fulfilment of the requirements for
the degree of Doctor of Philosophy
Faculty of Education
University of Tasmania
March 2013

DECLARATION OF ORIGINALITY

This thesis contains material that is original, except where due acknowledgement has been given. Material in this thesis has not been accepted for a degree or diploma by the University of Tasmania or any other institutions, except by way of background information and duly acknowledged in this thesis. To the best of my knowledge I believe that no material previously published or written by another person is cited except where due acknowledgement is made in the text of the thesis, nor does this thesis contain any material that infringes copyright.

AUTHORITY OF ACCESS

Fire and emergency management in Australia

Emergency management addresses the potential occurrence of major emergency situations requiring a whole-of-government approach: events such as floods, bushfires, cyclones, the consequences of acts of terrorism or the release of hazardous materials. These situations are usually characterised by the scope of their impact being community-wide, with medium-to long-term effects.

(Commonwealth of Australia, 2004, p. 1)

(photo: http://bushfirefront.com.au/)

ABSTRACT

This thesis proposes to make a contribution to the literature concerned with affect and teamwork in complex work domains. It presents a detailed analysis of people's affective experiences in fire incident management teamwork. This particular work activity was chosen because it represents numerous aspects of increasingly important features of high-consequence work environments. In such environments the work is characterised by high interdependency, time pressure and a sense of urgency. People working in such domains are susceptible to being emotionally charged, particularly when the potential consequences are high. Given the complexity and duration of events, it is also likely that they may be influenced by emotional exhaustion. Understanding the role of affect is, therefore, particularly important in this work domain and others like it.

The position taken in this thesis is a sociocultural one and is based on the assumption that people and their contexts cannot be separated. Hence, the experiences of the work context (e.g., as represented by organisational structures and organisational cultures) influences the affective states of incident management personnel.

In addition, there is a relationship between individual affect and collective affect as it plays out in teamwork. Fire incident management teamwork provides an excellent example of the way in which the affective states of incident management team members are interpreted collectively and feed into prevailing norms and values of certain groups that then become positive or negative group stereotypes.

This thesis is based on a qualitative study. Semi-structured interviews (n=70) were conducted across four states in Australia with experienced incident management team personnel. Participants were asked to talk

about their experiences when engaged in incident management teamwork. Using a qualitative theory building approach, the data was examined for people's affective experiences whilst engaged in work activity. The way in which organisational cultures are socially constructed within people's affective experiences and work activity were also examined in the data.

The study seeks to extend existing literature and understanding in the following ways. First, by elaborating the linkages between affect (manifested in descriptors of moods and emotions) to constructs such as collective efficacy and team cohesion which are typically cognitively framed. Second, by examining the intersection between individual and collective experiences and the way in which these are mediated by individual and collective affect. Finally, the thesis makes a contribution to the emerging body of literature about the role of affect in the workplace. In the domain under study, for example, the role of affect in emergency incident management teamwork is very present but not readily discussed.

The research concludes by highlighting the importance of the interconnections between affect and culture and the roles both play in teamwork. The thesis presents a model illustrating the ways in which individual and collective experience of affect may be built into models of teamwork. Many models of teamwork in the literature pay lip service to the affective domain but do not systematically examine how affect contributes to enabling and constraining teamwork.

Through the conceptual models of team differentiation, team fragmentation and team integration, the thesis shows how collective affect can either enable or constrain teamwork performance. The thesis concludes with a discussion about the implications from the findings

for practitioners, leaders, trainers, professional developers, policy developers and future research.

ACKNOWLEDGEMENTS

To all those people who participated in this study, I extend my appreciation to you all. A sincere thank you for taking time out of your busy schedule to share your lived experiences with me; without your stories there would be no thesis! It is my hope that this study, if only in a small way, will make a difference to incident management teamwork, so that you will each benefit.

To my supervisor, Dr. Christine Owen, who was there from the beginning of my journey and encouraged me to 'keep going'! Thank you so much for your patience, understanding and empathy during some difficult times in my personal life. I would also like to extend my gratitude to you for sharing your expertise and constantly asking the hard questions to challenge me and develop my thinking. Your encouragement and support over the years, not only with my research, but also with conference presentations has also been greatly appreciated.

I would also like to thank my co-supervisor Professor Douglas Paton for providing valuable feedback on my chapters and my nephew George Mondon who so kindly gave up his valuable time and spent many late nights proof reading.

I would like to extend a special thank you to my friends (and colleagues) Debbie Vogel and Kirsty Vogel for the support and encouragement you have both given me. I am so appreciative that you both gave up your valuable time to format and reference check this thesis. Without your in-put this thesis would not aesthetically be at the standard in which it is presented here.

To my friend Tanya Murphy, thank you for patiently listening to me as I enthused and agonised over my work. Your support and

encouragement gave me the focus and energy I needed to complete this thesis. The hours you spent to assist with data entry and data checking to ensure there were no errors is also greatly appreciated.

To my partner David Nicholas, thank you for your love, patience and support, and for giving me "time-out" especially over the last 12 months. Without you being so understanding I would not have been able to complete this thesis. The hours you spent turning my hand scribbled conceptual models into polished readable graphics is also greatly appreciated.

To my children, Amy, Casey and Samuel thank you so much for your love and encouragement. To my beloved mother who sadly passed away before I finished this journey, "Mum, guess what? I made it"!

CONTENTS

Chapter 7

Chapter 8

TABLES

FIGURES

APPENDICES

1

CHAPTER ONE

INTRODUCTION

1.1 Introduction to the study

Why study *affect* and work activity? There are three main reasons for studying *affect* in the workplace. The first reason is a moral one: work is an important element in people's lives and makes a significant contribution to wellbeing and quality of (working) life. Work contributes to one's sense of self through interaction with others. The second reason is both a political and economic one: with the changing nature of work, people are being placed under increasing pressure and becoming more susceptible to stress. The cost to the community is becoming an increasing concern because of direct (e.g., sick leave) and indirect effects (e.g., stress, accidents and poorer decision making) on loss of productivity. The third reason is about health and wellbeing in being able to support people in making good decisions and in building collective resilience in the face of adverse external environments.

When people are engaged in work that is meaningful to them they are more likely to experience positive *affect*. This is because meaningful work gives rise to positive experiences which can then become part of a feedback loop, which in turn, leads to improved performance. For example, positive affective experiences can influence people's problem solving and decision making, and a variety of performance-relevant outcomes including judgements, creativity and risk taking (Isen 2001).

Understanding *affect* is also integral to obtaining a richer understanding of work motivation (George & Brief 1996) and wellbeing (Briner 2005).

This chapter:

- outlines the term *affect* and why it is important
- introduces the changes occurring in the nature of work and provides a rationale as to why researching *affect* in the workplace is important
- outlines research examining how people have experienced *affect* in the workplace as the nature of work has been changing
- summarises the focus and importance of the study and the research questions
- outlines the structure of this thesis.

1.2 What is *affect* and why is it important?

If we are to study *affect*, what is it? The term *affect* generally encompasses feelings. There are two broad categories of feelings: moods and emotions. Moods take time to form and are relatively low intensity. They are a more generalised feeling (e.g., experiencing a good or pleasant feeling or a bad or unpleasant feeling). Moods also have little cognitive intent and tend to linger. In contrast, emotions surface by a particular cause and are short lived. Thus, emotions are a psychological reaction. Moreover, emotions are linked to specific actions (Forgas 2001; Barsade & Gibson 2007). *Affect* can also so describe how people feel and what people experience (for further details see Barsade & Gibson 2007).

Work consumes a considerable amount of an individual's life span, especially with the trend towards longer working hours in a number of workplaces (Moodie & Borthwick 1999). With the number of hours that people spend at work, it is important for people to be engaged in work

that is meaningful to them. Work provides a significant opportunity to socialise with others, shape our identity, learn our sense of worth, gain new knowledge and skills and make a contribution to society (Welton 1991). 'Making a contribution to the common good is what makes us aware of our role, of our ego. Socialization takes place, in the case of an adult, most effectively through the process of contributing to the common good' (Leymann 1989, p.284). When individuals are engaged in their work that is meaningful to them, it allows them to progress in their development in all areas of life because 'workplace efficacy is linked to efficacy in all other areas of human activity' (Welton 1991, p. 10).

Work provides an opportunity for individuals to gain knowledge, learn new skills and contribute to meaningful social relations (Welton 1991). However, when people lack positive experiences in the workplace, it can inhibit individuals' wellbeing. When this happens people are more likely to experience 'greater dissatisfaction with their jobs, higher stress and fatigue, and greater work-life imbalance' (Macky & Boxall 2008, p. 38).

Negative affective experiences (e.g., work stress, and mental and emotional exhaustion) are frequently politicised in Australian workplaces. The results of stress surveys are often used to lobby employers and governments in relation to various workers' entitlements and conditions. Yet, the focus in Australia all too often continues to marginalise work stress as an individual worker issue rather than an organisational agenda (Cotton 2003; Guthrie, Ciccarelli & Babic 2010).

With negative affective experiences increasing in Australian workplaces, the costs to the community over the last 16 years, through compensation payments and health care expenses, have increased substantially. For example, it was reported that the estimated total loss associated with work-stress compensation claims, in 1992–93, would more than likely

exceed $22 million (Johns 1996). This financial loss continued to increase, with an estimated cost of $105.5 million in 2000–01 (Ford 2004), and in more recent times, a report from Medibank Private (2008)[1] showed that work stress was costing the economy $14.81 billion per year. Indeed, in Australia work-related stress claims 'are the most expensive form of workers compensation claim' (Gutherie et al. 2010, p. 101).

Individuals being subjected to negative affective experiences (e.g., emotional exhaustion) has been a long standing issue within the workplace, and will continue. This, in part, is because of work intensification. Work intensification is defined by Green (2001) as 'the rate of physical and/or mental input to work tasks performed during the working day' (p. 56). Work intensification has evolved through high demands placed upon workers with technological advancement (Berryman 1993; Crean 1997; Lipsig-Mumme 1997), longer working hours (e.g., Cherniss 1980; Maslach & Jackson 1981) and the restructuring of work (e.g., O'Donnell 1995). According to Reed, Blunsdon, Blyton and Dastmalchian (2005), work intensification, as well as casualisation and de-differentiation of roles, are major contributors to work-life imbalance.

What is often overlooked, however, in understanding people's affective experiences is the way in which some cognitive structures (e.g., efficacy beliefs) can be utilised to enhance both individual and collective positive affective experiences. For example, perceived positive self-efficacy beliefs can increase success in work activities and lower adverse emotional reactions (Bandura 1997). Moreover, the degree to which people's affective experiences are embedded in collective work activity is often neglected.

[1] Medibank Private is a private health fund in Australia.

1.3 High-intensity, high-reliability, high-performance work

With high-intensity, high-reliability, high-performance work, there is a constant possibility of having to deal with unforseen emergent issues (e.g., fire behaviour, political demands). High reliability means that 'the consequences of errors are high, but the occurrence of errors is extremely low' (Baker, Day & Salas 2006, p. 1576). In high-reliability work, imperfect information processing and flawed decision making can lead to error (Helmreich 2000), consequently leading to intolerable ramifications. With changes in work organisation, high-intensity, high-reliability, high-performance work is becoming more common within a number of organisations. Fire and emergency management, aviation, military, finance and chemical industries are prime examples.

Many individuals who engage in high-intensity, high-reliability, high-performance work enjoy having some influence on the environment (e.g., juggling the complexities and facing the challenges) and living life at the edge of organised chaos (Flach 1999). Yet, research shows that people working in such dynamic and high-consequence environments are susceptible to negative affective experiences. Alexander and Klein's (2001) work with ambulance personnel, for example, found that 69 per cent of workers never had sufficient time to recover emotionally between critical incidents. Similarly, Burbeck, Coomber, Robinson and Todd (2002) found high levels of psychological distress amongst accident and emergency staff. This was largely due to staff being over stretched and having to deal with management in relation to work patterns. More recently, Malek, Mearns and Flin (2010) found that firefighters' stress had significant correlations with job satisfaction and psychological

wellbeing, and that coping behaviour had a significant influence on overall job satisfaction.

1.3.1 Teams engaged in high-intensity, high-reliability work activities

The demands placed on operators to carry out high-intensity, high-reliability, high-performance work has led most of the organisations involved to set up team structures based on the research that supports teams working in such demanding environments (e.g., Smith-Jentsch, Kriger, Salas, Cannon-Bowers 1999; Schaafstal, Johnston & Oser 2001; Cannon-Bowers & Salas 1998).

Teams come in a number of diverse configurations and perform different types of functions. Teams can have varying life spans, and people's team membership can have variability. Teams are defined in this thesis as:

Social work units of two or more people that 1) have meaningful task interdependencies and dynamic social interaction; 2) share valued goals; 3) exist for a delimited lifespan; 4) have expertise distributed among its members; and 5) possess clearly defined roles and responsibilities (Salas, Rosen, Burke & Nicholson 2007, p. 78).

There are some teams that contain functionally homogeneous members, while others are usually more heterogeneous. While many teams operate in stable environments, there are other teams such as incident management teams and medical trauma teams that operate in time critical complex environments. Work of this nature is also carried out in real time where once activities are initiated they cannot be stopped. Work carried out in such complex and demanding environments is also risky work because the focus of activities is on high-reliability operations (Owen 2001).

Teams are constructed of individuals and what makes those individuals come together as a team is social interaction and mutual experience. Whilst teams in dynamic and high-consequence environments may be comprised of highly skilled individuals, this does not necessarily make the teams highly skilled. Research (e.g., Cannon-Bowers & Salas 1998; Salas, Stagl & Burke 2004) indicated that teams comprised of highly skilled individuals working in dynamic environments (such as military or aviation) have, under certain circumstances, failed as teams because of poor teamwork. Salas et al. (2007) argued that high-performing teams are required 'to combine their individual technical expertise and coordinate their actions to achieve a common goal in such a manner that performance seems fluid' (Salas et al. 2007, p. 440). Under these circumstances, mechanisms such as self-efficacy beliefs and collective efficacy beliefs can assist teams to be able to deal with demanding situations and enhance performance outcomes (Bandura 2006).

It could be argued that people who work in high-consequence environments find their work activity to be meaningful, thus leading to satisfaction. On the other hand, in such workplaces people can also be more vulnerable to negative affective experiences. This is because much of the work involves risks and is cognitively demanding (Cannon-Bowers & Salas 1998). In addition, this type of work activity requires a high level of activity and accountability due to task complexity (McCarthy, Healey, Wright & Harrison 1997). It is therefore important to understand how people make sense of themselves and others around them in such turbulent environments.

1.4 Self-efficacy beliefs

With the characteristics of high-intensity, high-reliability, high-performance work and where people work with teams in this context, it is

important for individuals to have a strong sense of their capabilities so that they are able to pursue a course of action and collectively agree on that action to meet given situational demands. In this context, self-efficacy beliefs are important because they influence people's resilience to the difficulties, danger and stress that they experience in coping with environmental demands (Bandura 2000). Therefore, having a high sense of self-efficacy can assist in being able to successfully manage highly demanding work.

1.5 Collective efficacy beliefs

When working in teams where cooperation, coordination and collaboration are required to achieve the collective outcome, it is important for teams to have collective efficacy. Collective efficacy is defined as being able to perceive how the team is performing 'in its conjoint capabilities to organize and execute the courses of action required to produce given levels of attainment' (Bandura 1997, p. 447). According to Bandura (2000), 'perceived collective efficacy fosters groups' motivational commitment to their missions, resilience to adversity, and performance accomplishments' (p. 75). Bandura's social cognitive theory (1986) predicts that the decisions team members make about their work activity are directly influenced by their sense of efficacy for a particular task. The higher the team members' sense of collective efficacy, the more likely they are to overcome obstacles. Such resilience, in turn, tends to foster creative and innovative decision making (Bandura 2000).

One of the ways in which efficacy beliefs are developed is through mastery experiences. Mastery experiences are based on performance accomplishments. According to Bandura (1977), if performance experiences have been repeatedly received as successes they will raise

efficacy expectations. Conversely, if they have been perceived as failures they will lower efficacy expectations. It will be shown later in this thesis that mastery experiences plays an important role in the lived experiences of incident management personnel and, therefore, in incident management teamwork.

1.6 Cohesion

It will also be argued that it is important for teams to have a sense of cohesion when working in dynamic and high-consequence environments. This is because cohesion is 'a dynamic process that is reflected in the tendency for a group to ... remain united in the pursuit of its instrumental objectives and/or for the satisfaction of member affective needs' (Carron, Brawley & Widmeyer 1998 cited in Heuze, Sarrazin, Masiero, Rambault & Thomas 2006 p. 59). While there are some (e.g., Janis 1972) that contend that cohesion can foster 'group think', which in turn leads to poor decision making because of not considering alternatives, research has shown (e.g., Oliver, Harman, Hoover, Hayes & Pandhi 1999), for example, that cohesion in military teams contributed to effectiveness in combat situations under the right communication and teamwork conditions. Cohesion assists in developing a strong sense of collectiveness in teamwork which is important, especially when teams are engaged in dynamic and high-consequence environments. Having a high sense of collectiveness in teamwork is established through high collective efficacy beliefs and a sense of cohesion in other team members.

1.7 Researching *affect* in working life

The study of *affect* in working life emerged when there was a perceived need for managers to understand their workers' feelings and job satisfaction. The history of researching *affect* demonstrates how attention

to it has emphasised different facets ever since the industrial revolution. For example, mass production significantly changed the way people worked. While mass production saw a progression in technological and economic growth, workers were also subjected to repetitive mechanical methods. During this period, it was frequently reported that workers were experiencing anger, frustration and alienation due to the restrictions imposed (Mayo 1945 cited in Thompson 1989; Brown 1954 cited in Thompson 1989).

Research that was conducted on *affect* utilised case studies and attitudinal surveys supplemented with interviews (see for example, Fisher & Hanna 1931; Hoppock 1935; Roethlisberger & Dickson 1939). However, the diversity of these approaches was soon replaced with more narrowly focused methods such as structured questionnaires, and *affect* largely became conceptualised as job satisfaction, with both *affect* and job satisfaction being subsumed within the work attitude literature (see Saari & Judge 2004).

While research on *affect* has broadened in more recent years to include dispositional *affect* on organisational outcomes such as job performance, decision making, teamwork and leadership, it will be argued in Chapter 2, that the research approach has mostly had a narrow focus utilising a medical model that reduced emotions.

Indeed, there have been times when some researchers (e.g., Zajonc 1980) claimed that some affective experiences such as emotion were completely independent of cognition. While others (e.g., Lazarus & Folkman 1984) argued that cognitive appraisals were invariably necessary for the production of emotion. Since then, the latter view has been gaining ground from a number of theorists. Damasio (2001), for example, has challenged the traditional view of neurobiological research that views

emotions as the opposite of decision making. He found through working with patients suffering from brain damage, that emotions, and the physiological mechanisms through which they operate, are in fact a necessary component in knowledge and decision making. While neurobiological research and other approaches (e.g., psychodynamic; stimulus-response) acknowledge that cognition and emotions are interrelated, the emphasis is on the individual rather than the collective in understanding emotions.

With the growth of organisations in size and scope and applications of information technologies, work has become more interdependent and complex. Under these circumstances bureaucratic regulations often conflict with the needs of other stakeholders; as a result, workers find themselves in double binds, sometimes working with conflicting priorities. These challenges have led some workers to experience stress and burnout, interpersonal conflicts, and a reduced level of performance (e.g., Cherniss 1980b; Maslach & Jackson 1981b). When people are overloaded in their work activities, they can experience emotional exhaustion which in turn can lead to depersonalisation (e.g., detaching oneself from co-workers as a means of coping), and diminished personal accomplishment (e.g., inefficiency) (Maslach & Jackson 1981b).

In summary, there has been a voluminous amount of research that has examined moods and emotions (see for example Fisher 2000; Frijda, Mansteal & Bem 2000; Kupers & Weiber 2008), stress (see for example Cannon-Bowers & Salas 1998; Hancock & Szalma 2008) and burnout (see for example Cherniss 1981a; Schaufeli & Buunk 1996; Brotheridge & Grandey 2001) in people's working lives. Moreover, much of the research is narrowly focused and largely driven from medical models with an emphasis on stress and dysfunction. It is contended in this thesis

that a more adequate way of conceptualising *affect* in working life is required.

1.7.1 The importance of a sociocultural context in affect

Emotions are dependent and mediated 'by the discourse of our culture' (Jaggar 1989, p. 148) and individuals are 'not reducible to a physiological entity ... biology/self and culture/society are considered inseparable' (Benton 1991 cited in Sturdy 2003, p. 90). Thus it is argued that personal and emotional developments are situated in the social and cultural environment (Vygotsky 1978).

Theorists working from sociocultural perspectives embrace the notion that people and their social environment are inherently interconnected and cannot be separated. From this perspective, the context in which one works is not separate or external from the individual. It is argued, therefore, that the way people feel about themselves mediates their performances (Roth 2004). Context in this thesis includes structures such as work groups, roles and resources that encourage learning action and interaction (Valsiner & van der Veer 2000; Owen 2001), and culture, which is a shared group of understandings manifested in artefacts, values and beliefs and how people relate to and interact within this culture that is constantly changing (Owen 2001). Culture can influence behaviour in organisations and therefore work activity (e.g., Roth 2007). Structures, such as work groups, come with their own set of norms, values and beliefs, thus enabling cultural variety amongst groups (Cox 1993). Moreover, the degree to which cultural difference exists in a group can influence people's *affect* experiences (e.g., trust) (Hughes, McCoy, Severe & Johnston 2011).

In understanding *affect*, it is contended in this thesis that the notion of identity also needs some attention. It is argued that identity is important because work activities are influenced by the structure of the team and the organisation. The connection between sociocultural context, self and collective efficacy is established through identity organisation. Workplaces place specific identities upon team members in relation to other teams in the workplace hierarchy; that is, people's work groups are linked with how people and others around them perceive their identity. This is because first, people have expectations of how others should behave in a particular group or setting. This is known as a role schema which 'is the cognitive structure that organizes one's knowledge about appropriate behaviors in a social role' (Fiske & Taylor 1991, p. 119). Second, people who work in teams have both self and collective identity which comes into being with interaction (Jenkins 2004) where people are internally driven to contribute to the collective outcomes such as task performance and goals (van Knippenberg, van Knippenberg, De Cremer & Hogg. 2004).

1.7.2 The context of fire and emergency management

Fire is an inherent part of the Australian landscape. Fire is needed, at times, to assist in various ecologies (e.g., some trees to set seed); however, fires can also cause devastation to the environment. Natural hazards are receiving greater attention given the impacts of natural disasters of bushfires (and floods) on the environment. In Australia, fire and emergency management is becoming increasingly important as the impact of climate change results in more extreme weather events that need to be managed in terms of their effects on communities (Henessey, Macadam & Whetton 2006).

The context in which fire and emergency management is undertaken is in real time, and is complex and dynamic. In such high-consequence environments, people are susceptible to being emotionally charged, yet little attention has been given to the role of *affect* in this type of work activity. The type of work activity undertaken in fire and emergency management will be discussed in Chapter 4.

1.7.3 Defining affect in work activities

As discussed previously, both individual and collective affective experiences are important to this thesis. Individual affective experiences are important because they influence motivation, cognition and performance. Collective affective experiences are also important because much of the work people do is carried out in groups and/or teams. It has also been argued that it is common in the literature to conceptualise *affect* in the workplace to encompass moods and emotions. Researching the connections between moods and emotions and work activity is important because moods and emotion are embedded in activity and bring meaning to an experience or situation (Bakhtin 1990; Makitalo 2005; McCarthy & Wright 2005; Roth 2007). It is also important to understand how people's moods and emotions and their cognitions are influenced by teamwork and culture. Yet, such connections are overlooked frequently in the literature. Thus, it is necessary in this thesis to use a broader term (i.e., *affect*) than emotions. Moreover, in order to expand the study of *affect* (and its effects) in work activity, it is vital to incorporate cognitive elements such as efficacy beliefs and to acknowledge the individual through the collective in cohesion. Efficacy beliefs, it is argued, has an *affect* component. If people perceive their capabilities to perform a particular task as being high, for example, then they are more likely to feel good about their self and the work they do. Efficacy beliefs can also provide people with motivational commitment and resilience to adversity, and a

sense of collectiveness (Bandura 1997, 2000; Salas, Burke, Goodwin & Fiore 2006). It is also argued that cohesion has an *affect* component. If people perceive that team members are working close with the team in achieving the task as being high, for example, they are more likely to feel good about the way in which they work as a team. In addition, cohesion, under the right teamwork conditions, can contribute to good communication practices (McDowell & Zhang 2009) and assist in effectively managing situations in high-consequence environments (e.g., Oliver et al 1999).

For the purpose of this thesis then, *affect* is defined as an umbrella term for an array of elements (e.g., moods and emotions; efficacy beliefs and cohesion) that describe how people feel and what people experience (Barsade & Gibson 2007). It will be shown later in this thesis that people's lived experiences influences their *affect* which in turn impacts on their performance.

When *affect* is shared in the context of work activity, the social meaning becomes important and, thus, how people work collectively is of interest. Therefore, this thesis includes social identity in people's affective experiences. The way people perceive themselves influences the way they think, feel and behave. Identity also mediates performance and contributes to collective tasks and goals (Van Knippenberg, DeCremer & Hogg 2004; Roth 2004).

1.8 The focus of the study

In order to make a contribution to the literature concerned with *affect* and teamwork in the workplace, this thesis will present a detailed analysis of the experiences of practitioners who work in fire incident management. This particular work activity was chosen because it represents numerous

aspects of complex and demanding work where a high level of reliability and a high level of performance is required. Such work activity is characterised by high interdependency, time pressure and a sense of urgency (as previously mentioned). Fire emergency management, and the kind of work carried out by incident management teams provides an excellent example of the structures and cultures that influence people's affective states and teams' performance. By closely examining the lived experiences of people who work in incident management teams, this research explores:

- the lived experiences of practitioners;
- the linkages between practitioners' affective experiences and their work activity;
- the influences of cultures and identities on incident management work activity;
- the collective experiences when engaged in incident management teamwork;
- what enables and inhibits practitioners' collective experiences; and
- the role of collective affective experiences in team performance.

1.8.1 The aims of the study

There are three main aims to the study. The first aim is to examine the role of *affect* in one particular type of work activity (i.e., fire incident management) and to investigate the ways in which *affect* influences individual and collective work activity. The second aim is to provide a better understanding of incident management team members' affective states by exploring their collective experiences whilst engaged in incident management teamwork. By exploring the organisational contexts within

incident management, it will illustrate the linkages between work groups, culture, identity and work activity. The third aim of this study is to develop a model for teamwork that extends recent models. This will be done by illustrating the relationships between *affect* and culture and the roles they both have in teamwork.

1.8.2 Research questions

In order to meet the aims of this study, the following research questions will be addressed in this study:

1. What are the lived experiences of people who work in incident management teams?
2. What cultures can be identified within incident management work groups?
3. What affective experiences are influenced by those organisational cultures?
4. How can the role of individual and collective *affect* be conceptualised?
5. What are the ways in which *affect* intersects with a sociocultural context to influence Incident Management team performance?

1.8.3 The importance of the study

This study is important in a number of ways. First, this study seeks to extend the understanding of people's affective experiences in work activity by examining the way in which people feel (i.e., moods and emotions) with how people think (i.e., efficacy beliefs and cohesion). This is because such experiences also have affective components that are linked with people's sense of self and work performance.

Second, it makes a contribution to the literature concerning *affect* in the workplace by using a sociocultural perspective that takes into account the person as a whole that is connecting (socialised into, relating to, interacting with) with his/her sociocultural environment. Thus, understanding how people's affective experiences are inherently interlinked with their cultural norms, values and beliefs is important. However, the majority of research studies that have been undertaken, historically, have largely used medical models that do not take into account that individuals' affective states are socially constructed. Third, this study makes a contribution to the literature concerning teamwork by attempting to integrate concepts of *affect* as inputs and mediators in order to understand the contextual influences that are socially constructed by examining the relationships between organisational elements and culture.

1.8.4 Summary of the process of the research

The process of this research will be discussed in detail in Chapter 4. At this point it is helpful to provide a brief summary of how the research was conducted. In 2006, the author became immersed in a research study examining particular aspects of fire and emergency management, and began conducting interviews with incident management personnel who had managed bushfires as well as structural fires. The data collection continued into 2007. During this time a rural/urban interface fire in Tasmania, the author's home state, began and a number of bushfires in Victoria followed. This provided the author with the opportunity to observe incident management teams engaged in their work activity.

1.9 Organisation of the thesis

This chapter has provided an introduction to the key aspects of this thesis. Empirical research that has examined *affect* and work activities that are

significant to this study is reviewed in Chapter 2. These studies have been chosen from a range of disciplines because of their relevance to this thesis. Identified in the chapter are key themes that are important to researching both individual and collective *affect* in work activity.

Chapter 3 outlines the research design for this study. This includes the methodological approach for this study and the method used to collect the data. Interviews (n=70), for example, were conducted with people who work in incident management teams across four states (Tasmania, Victoria, New South Wales and Queensland) in Australia. The way in which the data was analysed according to Tesch's (1990) system of de-contextualisation and re-contextualisation is also discussed. In addition, the process undertaken to meet criteria of reliability and validity in qualitative research is outlined.

Chapter 4 discusses the context of fire and emergency management. Included in Chapter 4 are state and territory arrangements for fire-related emergencies. The chapter also discusses the management-based system for fire and emergency management which is known as The Australasian Inter-service Incident Management System (AIIMS). The training pathway for incident management personnel is also discussed.

Chapter 5 considers the research question: What are the lived experiences of people who work in incident management teams? The chapter is about the sense of self in context. Through the participants' stories, key themes of their lived experiences are discussed. It is demonstrated in the chapter that self-efficacy has an important role in the work that incident management personnel do. The linkages between participants' emotions and work activity are also shown.

The focus of this thesis is not solely on individuals in their workplace. This thesis also focuses on work groups (see Chapter 6) and teams (see

Chapter 7). This is because teams are part of contemporary work contexts and because the core structure in emergency management is the team. Salas et al. (2007) contend that teams' attitudes, perceptions and beliefs play an important role in team processes. Chapter 6 addresses the research questions: What cultures can be identified within incident management work groups? (and) What affective experiences are influenced by those organisational cultures? The chapter considers the importance of work groups and the cultural meaning ascribed to those groups.

Chapter 7 draws together concepts from the literature and the previous chapters' findings, and addresses the research questions: How can the role of individual and collective *affect* be conceptualised? (and) What are the ways in which *affect* intersects with a sociocultural context to influence Incident Management Team performance? This chapter discusses the linkages between individual and collective *affect*, team culture and incident management team work activity. A sociocultural model of *affect* for Incident Management Teamwork is presented.

Chapter 8, the concluding chapter of this thesis, summarises each of the findings and discusses implications. Chapter 8 also briefly explores directions for future research.

1.10 Chapter summary

This chapter has introduced the concept of *affect* and why it is important to research. Changes occurring in the nature of work (e.g., technological advancements, longer working hours and the restructuring of work) have led to intensification of work. Moreover, with the changes in work organisation, there is an increase in high-reliability, high performance work where people engaging in such work activity can feel a sense of

satisfaction but are also susceptible to feeling vulnerable and emotionally exhausted.

This study investigates the role of *affect* in one particular type of work activity (i.e., fire incident management) that provides numerous aspects influencing many high-consequence environments. It provides an excellent opportunity to investigate the ways in which *affect* is influenced by the experiences of individual and collective work activity which, in turn, impacts on individual and collective performance. To focus on the linkages between *affect* and work activity across individual and groups is particularly important. This is because much of the work activity in current work environments is carried out in teams, and the role of *affect* in work activity can assist people in building collective resilience in high-consequence environments. The next chapter will review the literature relating to *affect* and work activity that informs this study.

2

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

The previous chapter argued the importance of researching affect in people's work activities where high-consequence work is carried out. It also presented the structure of this thesis. This chapter draws together ideas and themes that are relevant to this thesis from a range of literature across differing disciplines. This thesis considers the role of affect in individual and collective performance. Thus, the chapter commences by reviewing individual affect and its mediating effects on performance followed by the influences of affect on collective performance. Next, given the attention that has been given to stress and burnout in the literature, the chapter examines stress and burnout in work activity. The influences of both self-efficacy and collective efficacy on performance are also reviewed. Finally, teamwork effectiveness literature will also be examined. The literature discussed in this chapter will then set up the discussions in the findings chapters to discuss understanding the ways in which people who work in incident management experience affect in the workplace and the role affect has on individual and team performance.

2.2 Scope

The literature has been drawn from a number of empirical studies that were conducted during the period 2000–2012. The literature was chosen

from a range of disciplines because of their relevance to different aspects this thesis. The terms used to search for relevant literature include:

- affect or felt emotions and performance and emergency management;
- self-efficacy and performance and emergency services or workplace or high reliability;
- collective efficacy or group efficacy or team efficacy and performance and emergency services or workplace or high reliability;
- burnout and/or stress and performance and emergency management;
- teamwork effectiveness.

2.3 Affect and performance

As mentioned in Chapter 1, the term affect generally encompasses moods and emotions (Forgas 2000) but can also describe how people feel and what people experience (Sigal et al. 2007). Chapter 1 discussed the fact that people's moods and emotions have important roles in individual and collective work activity. Thus, some of the studies that have been undertaken to examine the mediating effects of individual affect on performance, and those that have investigated the linkages between affect and group or team performance will now be reviewed.

2.3.1 Affect and its mediating effects on performance

The work of Fisher and Noble (2004) investigated the relationship between positive affect and productivity in everyday working life. The sample group consisted of 121 participants who worked in areas such as child care, hairdressing, sales, retail, maintenance, administration, nursing, accountancy, banking and counselling. In the study, participants

wore watches for a period of two weeks and when prompted by the watch alarms reported their emotional states and productivity at random times during their working day. The results indicated that tasks, skill and interest in activity all contribute to positive emotional states, and that these effects are mediated by performance.

Building on the focus of researching people's interest and effort in work activity, research has also been conducted on how positive affect influences motivation. Isen and Reeve (2005) conducted two experimental studies with psychology students (n=60). The findings from the two studies revealed that positive affect (i.e., feeling happy) influences intrinsic motivation and promotes responsible work behaviour such as forward thinking and the ability to stay on task. Isen and Reeve (2005) argued that the findings from their study are compatible with others (e.g., Erez & Isen 2002) who found that positive affect is beneficial to flexible thinking, effective problem solving and caution in dangerous situations.

Tsai, Chen and Liu (2007) conducted two studies to analyse the relationship between positive moods and task performance. Specifically, the work activities included collecting extensive information to meet the diverse needs of clients, analysing information and evaluating results to resolve problems and maintain good interpersonal relations with customers. How the participants rated their self-efficacy beliefs was also important to the study because self-efficacy was considered a motivational mediating variable. In other words, self-efficacy was seen as a state that was affected by individuals' positive moods. Tsai et al. (2007) drew on Bandura's (1982, p. 122) concept of self-efficacy as a personal judgement as to 'how well one can execute courses of action required to deal with prospective situations' (cited in Tsai et al. 2007, p. 1572).

In Study 1 the participants were asked to recall and evaluate their positive moods, self-efficacy and helping behaviours directed at colleagues over the past week. Supervisors of the participants were also asked to evaluate the participants' task performance. All variables were measured on a 4-point Likert Scale. In order to rule out the possibility of trait affect (i.e., personality characteristics) rather than state affect (i.e., moods and emotions), Study 2 was conducted to control for the effect of participants' affective personality. The results of the studies revealed that positive affective states predicted task performance beyond the influence of affective personality traits. Employees in more positive moods may perform better through interpersonal skills such as supportive behaviours.

In addition, it was found that the linkage between supportive behaviours and task performance was indirect, through reciprocity. This indicates that employees' helping behaviour toward colleagues remains an important antecedent to the individual's' task performance. This is important in this thesis because such behaviours underpin effective teamwork practices reported in the teamwork literature (see for example – Baker, Day & Salas 2006). In terms of motivational processes, the results showed that participants in more positive moods may perform better through higher self-efficacy and task persistence. Further discussion on the linkages between self-efficacy and performance are examined in Section 2.5.1 of this chapter.

2.3.2 Affect and group/team performance

More recently research has paid attention to how affect can be transferred amongst groups and teams. This is important because collective affective experiences can influence collective decision making and collective performance. Barsade (2002), for example, examined group emotional contagion on the transfer of mood among people in the group and its

influence on workgroup dynamics. Emotional contagion is ‘a process in which a person or group influences the emotions or behaviour of another person or group through conscious or unconscious induction of emotional states and behavioural attitudes’ (p.646). Emotional contagion was measured on self-report ratings, on a 9-point Likert-type scale pre-test and post-test. Participants were asked to what extent they felt *pleasant, happy, optimistic, warm, unhappy, pessimistic, gloomy, lethargic, depressed and sad.*

In addition to participants assessing their moods, they were also asked to assess their group’s task performance. Observers were also involved in rating the cooperative and competitiveness of the group from watching participants’ interactions via video recordings. The results showed that people continuously influenced other people’s moods which in turn influenced behaviours and judgements. In terms of group dynamics, the findings revealed that positive emotional contagion influenced cooperativeness and perceptions of task performance.

Brown and Brooks (2002) conducted qualitative research, using a grounded theory approach, to understand the emotional climate between day shift and night shift nurses in hospitals. They defined emotional climate as, ‘the set, or sets, of emotions or feelings, shared by groups of individuals implicated in common social structures and processes, and significant in the formation and maintenance of political and social identities and collective behaviour’ (p. 332). Brown and Brooks used the nine dimensions of emotional climate (i.e., *structure, responsibility, reward, risk, warmth, support, conflict and identity*) as developed by Litwin and Stringer (1968) to investigate the emotional climate in which nurses undertake their work.

After analysing over 35 hours of taped semi-structured interviews, Brown and Brooks concluded that the emotional climate of night nursing encompassed all six dimensions found by Litwin and Stringer (1968). In addition, Brown and Brooks' research found that nurses who worked during the night (as opposed to nurses who worked during the day) perceived that they took on substantial responsibility for patient care and felt they were overextended in their work activities which in turn appeared to provoke a feeling of vulnerability and fear. This is important because it illustrated that working under certain conditions such as working with fewer staff can potentially lead to work intensification and stronger negative emotions based on perceptions of vulnerability.

The findings of Brown and Brooks (2002) also showed that in terms of identity, there were attitudinal or cultural differences between the nurses that worked at night and those that worked during the day. Social identity has an important role in the workplace because with identity comes emotional importance of being a member of the group (Tajfel cited in Augoustinos, Walker & Donahue 2006) which is constructed through values and beliefs (Augoustinos et al. 2006). Participants who worked at night stated that they felt they were more qualified and experienced than the nurses who work during the day, even though they are all identified as nurses who work on wards and there were very few differences in their demographic characteristics. This illustrates that amongst nurses there was a sense of in-groups and out-groups where each group had their own set of collectively held norms, values and beliefs.

Brown and Brooks' research also found that some nurses who worked during the day wanted to change to night shift because there was a stronger sense of camaraderie and a sense of belonging amongst night nurses. These findings are important because they illustrated that while nurses who worked at night experienced more pressure, vulnerability and

fear, they also sensed a stronger collective identity under such adversity. These findings are particularly interesting to note in this thesis. First, because it will be shown in this thesis that in incident management work these feelings are also evident. Second, it will be demonstrated in this thesis there are in-groups and out-groups that were described by participants, which will be shown to be based on different divisions of labour and other organisational characteristics. When people identify in-groups and out-groups in culture it provides insights into what is happening within and between those groups (Keyton 2005). Third, it is argued throughout this thesis that identity and emotions are embedded in work activity and are therefore pertinent elements in social relationships.

Two experimental studies were conducted by Levin, Kurtzberg, Philips and Lount Jr. (2010) to investigate the role of affect in knowledge transfer. Levin et al. (2010) considered that knowledge transfer involved 'different individual tasks (i.e., sharing and listening) that are nonetheless interdependent and require interpersonal communication' (p. 125). In Levin et al. (2010) research, the first study consisted of MBA students (n=108) and the second study consisted of undergraduates (n=180). Specifically, they looked at elation/happiness as a positive affective state and anger/frustration as a negative affective state. The results showed that people who received and absorbed new information had heightened affective experiences as opposed to those people who sent the information. Moreover, receivers who experienced elation/happiness had more success in sharing and receiving information than did those who were experiencing anger/frustration. While the findings also showed that senders' affective states had no direct impact on knowledge transfer, it did have an indirect role. Pairs where both sender and receiver experienced the same affect did better in their performance than others, in terms of successful information exchange, than the pairs where both

sender and receiver were experiencing differing affective states. In light of these findings, Levin et al. (2010) concluded that 'affect plays a critical but somewhat complex role in the knowledge-transfer process' (p. 135).

The role of affect in knowledge transfer is important to this thesis because it is a fundamental process in teamwork and therefore in managing incidents. In addition, there are times when fire and emergency personnel are subjected to working under extreme conditions which can potentially lead them to experiencing both positive and negative heightened arousal. Thus, it is important to gain an understanding of how affect might influence their knowledge transfer.

Experimental research conducted by Pfaff and McNeese (2010) focused on the effects of mood and stress on team cognition. The concept of team cognition recognises that individuals alone might not have the knowledge and skills to complete the task individually, hence, other team members' cognition and resources are sourced. A computer-based simulation (i.e., NeoCITES) that represented situations and resource allocation of tasks of distributed incident management teams was used for the experiment. The two experiments developed for the study were almost identical, with the exception that time pressure was used in Experiment 1 and performance pressure was used in Experiment 2. In the stress condition of Experiment 1, participants received 30 incidents to resolve in the timeframe of 10 minutes. In the non-stress condition participants received 18 incidents to resolve in the timeframe of 10 minutes. The result showed that, in part, time pressure was detrimental to the teams' performance because of the negative affect it produced. According to Pfaff and McNeese (2010), the results suggested that participants with negative moods felt unable to make a contribution in the team's outcome; they were less likely to prompt their team members to take action and made less effort to anticipate what other team members required. The results also showed

that participants who had high levels of negative affect and anxiety also felt that within-team cooperation was low.

These findings have important insights because in high-reliability work such as incident management teamwork, high cognitive and physical demands, and time pressure are prevalent (Cannon-Bowers & Salas 1998). In addition, teams who work under intense pressure need to anticipate the needs of others (Orasanu 1990) and have a sense of collective trust and team orientation as these elements can contribute to optimising teamwork (Salas et al. 2007) when attempting to resolve problems.

Table 2.1 summarises the studies reviewed in this section. What can be drawn from these studies is that when people are engaged in work activity that is both productive and meaningful, it contributes to one's positive affective experiences, which in turn assists in enhancing interpersonal skills, knowledge transfer processes and flexible thinking. In addition, people's affective experiences are transferable amongst group/team members, and this can influence the dynamics of the team and therefore collective performance. When people work in high-consequence environments they are susceptible to feeling vulnerable and having a sense of fear. In such environments when there is a sense of urgency, it can negatively influence people's affective experiences and, therefore, collective performance. In summary, these studies have shown that affect is important to consider in work activity; that individuals' affective experiences can influence collective performance and when working in high-consequence environments it is emotionally, cognitively and physically demanding. The limitations to these studies are that many of them used self-report measures only and the participants were undergraduates.

Table 2.1 The contributions and problematics of studies examining affect and performance

Author and date	Examined	Results	Contributions to this thesis	Problematics of the studies
Fisher & Noble (2004)	• The ways in which work activity plays a part in emotional states	• Tasks, skills and interest in work activities contribute to positive emotional states	• Conducted in the workplace whilst engaged in work activity	• Self-report measures only
Isen & Reeve (2005)	• The influence of positive affect on intrinsic and extrinsic motivation	• Positive affect influences intrinsic motivation and is beneficial to flexible thinking	• Affect is linked to motivation • Affect is important to consider in work activity (including problem solving	• Conducted with undergraduates
Tsai, Chen & Liu (2007)	• The linkages between positive moods and task performance	• People with positive moods may perform better through interpersonal skills • There is a linkage between performance and efficacy spirals	• Looked at supportive behaviours (which underpin effective teamwork practices) with co-workers and task performance • Included self-efficacy with moods	• Does not consider context (e.g., culture)
Barsade (2000)	• The transfer of mood among people in the group and its influence on workgroup dynamics	• Moods are transferable amongst group members and influence group dynamics	• Collective emotions • Looked at how individual moods can transfer amongst groups and can influence group performance • Considered group dynamics	• Self-report measures only • Conducted with undergraduates
Brown & Brooks (2002)	• Identifying the emotional climate of night nursing	• Night nurses carry considerable responsibility and experience feelings of vulnerability and fear • Sense of identity and camaraderie are important in night nursing	• Feelings of vulnerability and fear appear to characteristic when working in high-consequence environment • Considered cultural elements • Grounded theory • Considered social identity	• The influences of the emotional climate of night nursing on performance was not explored

Author and date	Examined	Results	Contributions to this thesis	Problematics of the studies
Levin et al. (2010)	• The role of affect in knowledge transfer	• Affect influences knowledge-transfer processes	• Examined the linkages between affect and knowledge transfer • Examining knowledge transfer as a group level construct	• Conducted with undergraduates
Pfaff & McNeese (2010)	• The effects of mood and stress on distributed team cognition	• Time pressure is detrimental to a team's performance because of the negative effect it produces • Negative affect influences team outcomes	• Examined linkages between stress, affect and team cognition when operating under time pressure which is cognitively and physically demanding	

2.4 Stress, burnout and performance

While the main focus of this thesis is to better understand the role of individual and collective affect in work activity, it is also important to review some of the research that has focused on the way in which stress and burnout influences work activity. This is because a considerable amount of attention has been given to this topic, and it is also important because people who work in high-consequence environments are faced with a number of elements that can lead to work intensification which can potentially lead to stress and burnout, as discussed in Chapter 1.

2.4.1 Stress and performance

An assessment of work stress in a hospital setting was conducted by Rutledge, Shively, Weinger, Stucky, Wolfson and Dresselhaus (2009) with physicians (n=185) and nurses (n=119). Participants were asked to carry handheld computers for a week and record information about their previous night's sleep, current work activities and location, emotional stress characteristics and perceived workload. The results demonstrated that although both groups showed evidence of frequent elevations in work stress, physicians' reported emotional stress scores were approximately 50 per cent higher than those reported by nurses. The results also showed that both sleep quantity and sleep quality were independent predictors of emotional stress and that higher work stress and lower sleep quality are linked with poorer memory performance.

These results are particularly pertinent to this thesis because nurses' and doctors' work activity has similar characteristics (e.g., high-intensity, high-reliability) to incident management work activity. In Chapter 5 it will be illustrated that work carried out in such environments can, at

times, lead individuals to feeling stressed and vulnerable and has the potential lead to poor quality sleep.

2.4.2 Burnout and team performance

As previously mentioned, when working in environments that involve high-reliability, high-intensity work, individuals and teams are faced with a number of demands that can leave individuals feeling cognitively and emotionally exhausted. Such exhaustion can impede effective teamwork. For example, Gevers, van Erven, de Jonge, Mass and de Jong (2010) investigated the combined effects of acute and chronic job demands on acute job strain during medical emergencies. In the study the term 'acute job strain' encompassed cognitive strain which includes 'narrowing of attention and impairment of declarative memory and information processing' (p.1577) and physical strain which included 'reduced fine motor skills, increased transpiration and physical fatigue' (p.1577).

In their study Gevers et al. (2010) found that acute job demands such as cognitive and emotional demands that are characteristic of emergency situations can impede effective teamwork behaviour (e.g., coordination, communication, monitoring and back up), but only when they resulted in acute job strain. The results showed that when doctors and nurses were required to do a lot more emotionally draining work they were more likely to experience acute job strain. Although acute cognitive and physical strains negatively influenced effective teamwork, effective teamwork was particularly impeded by acute emotional strain.

This research is relevant to this thesis because incident management personnel are subjected to time pressure and a strong sense of urgency. Therefore, they also have high levels of responsibility and, at times, high levels of risk.

Day, Sibley, Scott, Tallon and Ackroyd-Stolarz (2009) conducted a study with air medical healthcare (AMH) professionals (n=106) to investigate the extent to which work stressors and barriers to patient care influence burnout. They also examined the extent to which job control and team efficacy (collective efficacy) decreases burnout and negatively impacts work stressors on burnout. The results showed that safety incidents, worries about medical hassles and catastrophes and barriers to patient care accounted for significant variance in emotional exhaustion and depersonalisation. Emotional exhaustion is 'a depletion of emotional, physical, and interpersonal resources causing the individual to feel fatigued. This exhaustion leads employees to emotionally and cognitively distance themselves from work and become cynical (i.e., depersonalization)' (p. 8).

Day et al. (2009) argued that the findings from their study are compatible with others (e.g., Aasa, Brulin & Barnekow-Bergkvist 2005; Neale 1991) who found that there was a definite link between levels of work-related fears and levels of wellbeing. In terms of the extent to which team efficacy decreased burnout, the results showed that participants who had greater confidence in their teams' skills and training experienced lower exhaustion, depersonalisation and lower emotional exhaustion regardless of how much they worried about blockages to patient care. This is important to this thesis because as will be discussed later, participants in the study place high importance on having confidence in self and confidence in others. It will also be shown that such collective experiences are built around a set of shared understandings of beliefs and values (Louis 1986). The literature related to team/collective efficacy on performance is discussed in Section 2.5.2 of this chapter.

Table 2.2 summarises the studies reviewed in this section. These studies showed that when working in a high-consequence environments people

are susceptible to stress and burnout because high-reliability organisations are characterised by cognitive and emotional demands. Such demands can influence people's wellbeing (e.g., quality of sleep, poorer memory) which in turn can lead to poor performance. The limitations to these studies are that they used self-report measures only and did not consider the broader systemic issues that will influence work stress and burnout.

Table 2.2 The contributions and problematics of studies examining stress and burnout

Author and date	Examined	Results	Contributions to this Thesis	Problematics of the studies
Rutledge et al. (2009)	• The relationships between work stress, work activity patterns and sleep	• Higher work stress and lower sleep quality are linked with poorer memory	• Conducted in a high-consequence environment whilst engaged in work activities	• Does not consider cultural elements which is an important element given the ways in which the various groups (e.g., physicians and nurses) work together and their dynamics
Gevers et al. (2010)	• The effect of job demands on job strains in emergencies and its consequences for individual teamwork behaviour	• Cognitive and emotional demands impede effective teamwork behaviour	• Conducted in high-consequence environment • Examined cognitive and emotional demands which are characteristic of high reliability organisations • Examined the linkages between cognitive and emotional demands and teamwork	• Self-report measures only

Author and date	Examined	Results	Contributions to this Thesis	Problematics of the studies
Day et al. (2009)	• Workplace stressors and burnout, and the moderating impact of job control and team efficacy	• There is a definite link between work related fears and wellbeing • Enhanced team efficacy decreased burnout	• Examined the linkages between collective efficacy (including perceptions of self and other team members) and burnout • Conducted with participants who engage in high intensity, high reliability work • Conducted focus groups	• minimal examination of the linkages between collective efficacy, burnout and performance

2.5 Efficacy beliefs and performance

Social cognitive theory brings together the interaction between social and environmental aspects in the regulation of human behaviour (Bandura 1982; 1986). One of the concepts in social cognitive theory is that people's beliefs about their capabilities are also influenced by others through social comparison and reinforcement, and 'self beliefs of efficacy influence how people think, feel and act' (Bandura 1989 p. 411). According to Bandura (1982), people with perceived high self-efficacy will spend much time and effort to overcome blockages and demands. Conversely, people with perceived low self-efficacy will spend little time and effort in overcoming any blockages to meet demands. As discussed in Chapter 1, efficacy beliefs are important in this thesis because the participants in this study engage in physically and cognitively demanding work and, at times, there are time pressures where there is a sense of urgency, which frequently requires perseverance.

2.5.1 Self-efficacy and performance

Williams, Wissing, Rothman and Temane (2010) conducted a cross-sectional survey with participants who worked in the public service (n=459). The focus of the study was to examine the role of self-efficacy in the workplace in relation to job demands, job resources and psychological outcomes. The results showed that self-efficacy was positively related to measures of optimal functioning and negatively related to measures indicating non-optimal functioning such as withdrawal from work and the likelihood of being prone to health inflictions. The findings also showed that self-efficacy may assist in coping with the effects of a demanding workplace. This is important to this thesis because people who work in fire and emergency management

engage in physically and cognitively demanding work that is unpredictable and complex and, at times, has time pressures where there is a sense of urgency, as mentioned in Chapter 1. Thus, efficacy beliefs can be utilised in a positive way to assist with highly demanding work.

Tams (2008) examined the way in which people think about self-efficacy in the workplace. The study was conducted with participants (n=74) from different work settings (i.e. management consulting, a brand design agency, job search agency, restaurant service, telemarketing and financial trading). Interviews with participants were undertaken to gain information on their work experiences, and their ability to deal with performance expectations and feedback. Specifically the questions that were asked were: How do you know you can do a good job? How competent do you feel in your current role? Can you judge how well you can work this relationship (referring to a demanding client)? The findings revealed there is a connection between self-efficacy beliefs and work activity.

Tams' (2008) research found that in terms of *attending to one's doing*, people develop confidence by drawing on enactive mastery which can be accomplished by focusing on the task and generalising from previous experiences. People evaluated *their doing* based on self-defined checkpoints such as targets, established practices, job requirements and benchmarks. In terms of *attending to one's social environment*, the findings showed that people do not only learn experientially they also learn socially, which is consistent with Bandura's (1977) theory of social persuasion. Participants drew on feedback and supportive interaction with their colleagues, supervisors and clients. They also indicated how it was important to have trust, openness and respect.

According to Tams (2008), the participants also needed to reflectively reinterpret negative feedback, thus learning from setbacks. There were

some participants who responded to negative feedback by taking a stance toward their environment. They did this by distancing themselves from negative feedback and criticism, and asserting a personal perspective of their performance by engaging in positive self-talk and being aware of their emotions. This study provided useful insights into how people think about self-efficacy because it drew attention to the ways in which people make sense out of both positive and negative elements in their work activity and to give that meaning. In addition, the results showed how people can draw on a range of strategies to construct self-efficacy.

While the above studies have focused on the linkages between self-efficacy and performance, the next section examines some of the current studies that have investigated the linkages between collective efficacy/team efficacy and performance.

2.5.2 Collective efficacy/team efficacy and team performance

As mentioned previously, people who work in teams have high task interdependence where coordination and collaboration is imperative to achieving team effectiveness and collective goals. In this case, self-efficacy may not be sufficient to judge the perceived efficacy of team processes that are important for team performances (Katz-Navon & Erez 2005). Collective efficacy, on the other hand, is 'a group's shared belief in its conjoint capabilities to organize and execute the courses of action required to produce given levels of attainment' (Bandura 1997, p. 447), as defined in Chapter 1. Hence, collective efficacy assists to explain how people work, learn and function together within social units (i.e., teams and groups).

Tasa, Tagger and Seijts (2007) were interested in understanding the development of collective efficacy in teams by building on the work of

Gibson (1999) who observed that ‘collective efficacy develops partly through exchanges of information and observed behaviors within the team’ (p. 4). They conducted a longitudinal study with 191 business students (n=50 teams) who were undertaking simulation training in human resource management. As there is a relationship between self-efficacy and collective efficacy, participants were asked about their self-confidence in performing specific tasks as well as how confident they were in the group specific tasks. The self-efficacy of team members was measured after the group had been together for two weeks. Participants were asked to rate the degree to which they felt confident to demonstrate a number of teamwork behaviours (e.g., set deadlines for achieving tasks, try to calm down team members that are in conflict). Collective efficacy was measured at weeks two and seven to allow individuals to become more familiar with their team members, team roles and the nature of the simulation. The results from the study showed that collective efficacy to some extent evolved as team members monitored team performance feedback. With these results and the work of Tsai, Chen and Liu (2007), discussed previously in Section 2.3.1, it is evident that supportive behaviours are important elements in efficacy and performance.

The Tasa et al. (2007) findings also showed there is a linkage between performance and efficacy spirals. Efficacy spirals occur when ‘groups high in collective efficacy are likely to use high quality group processes, perform well, and yield increasing collective efficacy and performance’ (p. 24). This finding illustrates that when collective efficacy is perceived to be high, team members are more likely to be motivated to collectively perform well. Moreover, when experiences have been repeatedly received as successes they will raise efficacy expectations. Conversely, if they have been perceived as failures they will lower efficacy expectations (i.e., Mastery experiences, Bandura 1977;1982).

2.5.3 Collective efficacy/ team efficacy, interdependency and performance

With an emphasis on workplaces adopting a team based approach to task activities a number of researchers have investigated the linkages between team-efficacy, potency and performance. It is important to note the difference between collective efficacy and group potency. As previously discussed, collective efficacy (or team efficacy) is conceptualised as a group's (or team's) belief that is can successfully perform a specific task, whereas, 'potency refers to generalized beliefs about the capabilities of the team across tasks and contexts' (i.e., our team will be successful no matter what the task) (Gully, Incalcaterra, Joshi and Beaubien 2002, p. 820).

Gully et al. (2002), for example, undertook a meta-analysis to examine interdependence as a moderator of the observed relationship between team-efficacy, potency and performance. Their conceptualisation of interdependence 'begins with the task, but extends to include collective goals, rewards, and outcomes' (p. 821). Gully et al. (2002) defined each of these aspects:

> Task interdependence refers to the degree of the task-driven interaction among members...Goal interdependence refers to the interconnections among members implied by the type of goal (e.g., individual or team) ...Outcome interdependence refers to interdependent feedback and rewards (p. 822).

The results showed that team-efficacy and potency were strongly related to performance. In terms of interdependence as a moderator, the findings revealed that interdependence moderated the relationship between team-efficacy but not between potency and performance. The results also found that collective efficacy related more highly to performance at a team level than individual level. Gully et al. (2002) argued that the results imply the

relationship between team efficacy and performance was strongly affected by team context; that is, when the task and context encourage coordination, communication, and cooperation among members, collective efficacy will be enhanced. They further contended that leadership was a key variable in influencing the development and growth of both self-efficacy and collective-efficacy because leaders of a team often strongly influence the efficacy perception of others.

Similar to the research undertaken by Gully et al. (2002), Katz-navon and Erez (2005) were interested in understanding the linkages between task interdependence and collective efficacy. Their study was undertaken with engineering students (n=120) who were placed into teams (n=40) to participate in high interdependence and low interdependence teamwork. The findings of Katz-navon and Erez (2005) showed that interdependence was essential for the development of collective efficacy as a group (or team) level concept. The results also demonstrated that when there was low task interdependence, self-efficacy played a significant role in performance but not when there was high task interdependence. Teams with high task interdependence showed that self-efficacy and collective efficacy emerged as two different constructs. As such, Katz-navon and Erez suggested that as tasks become more interdependent it is difficult for a person to cognitively disconnect their own performance from their team's performance.

These findings are important, especially since incident management teamwork calls for high levels of interdependency. With collective efficacy beliefs linked to interdependency, efficacy spirals (Tasa et al. 2006) and therefore performance; it suggests that having a high sense of collective efficacy will assist team members to direct their attention and actions towards minimising risk even under in such high intensity conditions.

2.5.4 Collective efficacy, cohesion and performance

Another construct that is important to consider in teamwork is cohesion. This is because cohesion is 'a dynamic process that is reflected in the tendency for a group to ... remain united in the pursuit of its instrumental objectives and/or for the satisfaction of member affective needs' (Carron, Brawley & Widmeyer 1998 cited in Heuze et al. 2006 p. 59). There are two key dimensions to cohesion. The first dimension is between the individual attractions to the group and group integration. The second dimension is between tasks and social interaction of the group (Heuze et al. 2006; Ahronson & Camerson 2007), as mentioned in Chapter 1. According to Heuze et al. (2006), within these two dimensions there are four constructs. They are (1) group integration-task, which involves team members' perceptions of the closeness within the team in achieving the task; (2) group integration-social which reflects team members bonding in terms of social activities; (3) individual attractions to group-task which describes team members' personal involvement in tasks; and (4) individual attractions to group-social which involves team members' perceptions of how they feel about personal involvement in social interaction with the group. While there are four constructs within cohesion, of interest in this thesis is the way in which individual team members perceive their personal involvement in collective tasks and how team members perceive the closeness within the team in achieving the task. The linkages between cohesion, collective efficacy and performance are also of importance. It will be illustrated later in this thesis that team members' affective experiences (e.g., cohesion and efficacy beliefs) are connected through their collective experiences.

Heuze, Raimbault and Fontayne (2006) examined the mediating effects in the relationships between cohesion, collective efficacy and performance with professional basketball teams (n=17) over eight team training

sessions. Pre-test performance questionnaires were distributed a few days prior to each team training sessions. The questionnaires contained 18 items to assess the four aspects of cohesion. For example, individual attractions group-task (e.g., I do not like the style of play on my team); group integration-task (e.g., members of my team are united in trying to reach the goals for performance). Participants were asked to rate, the degree to which they felt confident that the team could handle different situations (e.g., play all floor defence, ability to handle the ball against defensive pressure). Post-test performance questionnaires were distributed after each team training session.

The findings from this study revealed that collective efficacy, in part, was established through athletes' individual prior performance. This is congruent with Bandura's (1977) theory that mastery is a powerful source of information in establishing collective efficacy. It was also shown that collective efficacy influenced athletes' perception of team members being united in trying to reach the goals for performance. The findings from Heuze et al. (2006) showed that group integration-task, which is how team members' perceive the closeness within the team in achieving the task only appeared as a consequence of prior individual performances. As a result, Heuze et al. (2006) suggested that 'poor individual performance might lead athletes into a downward cohesion-collective efficacy spiral that might isolate them in their team' (p. 66). This is important to this thesis because simply by bringing individuals together to perform as a team does not create effective teamwork. The role of efficacy beliefs and cohesion in collective performance and the importance of acknowledging the nexus between individuals and the team will be discussed later in this thesis. The implications for trainers and leaders will also be discussed.

Lent, Schmidt and Schmidt (2006) were interested in investigating the linkages between self-efficacy, collective efficacy, cohesion and

performance. They conducted their research with engineering undergraduates who were working in project teams. The project teams were designed so that students were able to develop skills at managing team interaction so that they could work on realistic engineering problems. To measure collective efficacy, participants rated to what degree they were confident in their team's ability to perform specific tasks. To measure team cohesion, participants rated the degree to which they agreed or disagreed with negatively worded statements (e.g., there is a feeling of disunity amongst the group).

The results showed that the way in which team members perceive their sense of self influenced the judgements they made on the team's collective efficacy. For this reason there is a relationship between self-efficacy and collective efficacy. This result also supports the findings of Heuze et al. (2006). Lent et al. (2006) also found that there was a strong relationship between collective efficacy and cohesion and a small correlation between self-efficacy and cohesion. In terms of the relationship between collective efficacy and performance, the results showed collective efficacy was predictive of team performance, with a strong relation of collective efficacy to team-related effectiveness. Team effectiveness was rated on effort, quality and functioning by both participants and instructors.

Other studies have examined the linkages between collective efficacy and organisational context. For example, Borgogni, Petitta and Mastrorilli's (2010) work examined organisational collective efficacy in the Italian Airforce (n=387). Borgogni et al. defined organisational collective efficacy as, 'the belief by members of the organisation that their organisation as a whole is able to cope effectively with challenges to the pursuit of its mission' (p. 517). Specifically, two studies looked at how self-efficacy and perceptions of context related to collective efficacy, and

how collective efficacy is related to organisational commitment and job satisfaction. The findings revealed that self-efficacy is positively related to collective efficacy, and collective efficacy is highly related to organisational commitment and moderately related to job satisfaction. In addition, it was found that collective efficacy has a stronger relationship with the perceptions of leaders in terms of assigning tasks, facilitating collaboration, supporting subordinates and recognising the achievement of goals than the perceptions of colleagues with regard to cooperation, reciprocal trust and support. This is interesting to note because later in this thesis it will be shown that cooperation, trust and support are valued by personnel in incident management because such elements play a part in effectively managing incidents.

It will also be shown that such collective experiences are influenced by culture. The degree to which cultural difference exists in a team, for example, can influence trust (Hughes, McCoy, Severe & Johnston 2011). The finding that leaders place importance on facilitating collaboration, supporting subordinates and recognising achieving goals is also important and relevant to this thesis.

Table 2.3 summarises the studies reviewed in this section. The key themes from these studies are that there is a linkage between self-efficacy and collective efficacy and that such efficacy beliefs are socially constructed through supportive behaviours (e.g., feedback) and mastery experiences. When people experience a heightened sense of self-efficacy it can assist in coping with workplace demands and positively influence individual performance. Similarly, when people experience a heightened sense of collective efficacy it can assist with adversity and enhance collective performance. In addition, there is a linkage between performance and efficacy spirals so that when efficacy beliefs are perceived to be high, they can contribute to enhancing the collective

performance of the group or team. Conversely, when people's efficacy beliefs are perceived to be low it tends to decrease the collective performance of the groups or team. What is also of importance is that when a team is encouraged to communicate, cooperate and have high interdependency, it fosters collective efficacy, which in turn, positively influences the collective performance of the team.

In summary, these studies have shown that both self-efficacy beliefs and collective efficacy beliefs are important to consider in work activity, the way in which people perceive their sense of self influences collective efficacy which in turn influences the group to the team's collective performance. In addition, both self-efficacy and collective efficacy are socially constructed. The limitations to these studies are that a number of them used self-report measures only and many used participants who were undergraduates.

Table 2.3 The contributions and problematics of studies examining efficacy beliefs

Author and date	Examined	Results	Contributions to this Thesis	Problematics of the studies
Williams et al.(2010)	• The role of self-efficacy in relation to job demands, job resources and psychological outcomes	• Self-efficacy is related to functioning. • Heightened self-efficacy can assist in coping with the effects of workplace demands.	• Illustrated the importance of self-efficacy in assisting with job engagement and job demands	• Used self-report measures only
Tams (2008)	• The ways in which people develop and maintain self-efficacy in work activity	• People develop confidence by drawing on enactive mastery • People learn socially through feedback and supportive interaction	• Provides insights into how people think about self-efficacy • Illustrated the ways in which people make sense out of both positive and negative elements in their work activity and to give that meaning • Considered cultural elements	• Did not connect self-efficacy to antecedents
Tasa et al. (2006)	• The effects of individual and team-level factors on observed behaviours and the development of collective efficacy for mastering a complex team task	• Participants with positive affect may perform better through higher self-efficacy and task persistence	• Illustrated the importance of supportive behaviours on developing efficacy beliefs and performance	• Conducted with undergraduates • Self-report measures only

Author and date	Examined	Results	Contributions to this Thesis	Problematics of the studies
Gully et al. (2002)	• Examined the moderating effects of level of analysis and interdependence on the observed relationships	• Interdependence moderated the relationship between team-efficacy but not between potency and performance • The relationship between team efficacy and performance is strongly affected by team context	• Illustrates that collective efficacy influences team performance • Illustrates that collective efficacy is influenced by task and context coordination, communication and cooperation among member	• Does not discuss the culture of the team and its relationship to collective efficacy
Katz-Navon & Erez (2005)	• The role of task interdependence on self-efficacy and collective efficacy	• Self-efficacy and collective efficacy cannot be separated when teams work under low interdependency • In teams with high interdependency it is difficult for members to separate their own performance from their team performance	• Illustrates interdependence is essential for the development of collective efficacy • Demonstrated the linkages between collective efficacy and high and low interdependence	• Conducted with undergraduates • Self-report measures only • Does not discuss structural elements that configure interdependency in work organisations
Heuze et al. (2006)	• The mediating effects in the relationships between cohesion, collective efficacy and performance	• Individual performance influences participants' perception of cohesion with in turn influenced perceived collective efficacy	• Demonstrated there is reciprocal relationship between task cohesion and collective efficacy at an individual level • Illustrates there is more to effective teamwork than individuals working together	• Self-report measures only

Author and date	Examined	Results	Contributions to this Thesis	Problematics of the studies
Lent et al. (2006)	• Collective efficacy beliefs relation to self-efficacy, cohesion and performance	• There is a relationship between self-efficacy and collective efficacy • There is a strong relationship between collective efficacy and cohesion • There is a strong relation of collective efficacy to team-related effectiveness	• Illustrated the way in which team members perceive their sense of self influences collective efficacy • Illustrated the importance of collective efficacy and team effectiveness • Illustrated the linkages between collective efficacy, cohesion and team performance	• Conducted with undergraduates
Borgogni et al. (2010)	• Collective efficacy at a macro-organisational level	• Collective efficacy is highly related to commitment and moderately related to job satisfaction	• Considered linkages between self-efficacy, collective efficacy and context	• Although defence services are considered high-consequence environments, limited environment to non-combat forces

2.6 Teams and team effectiveness

While this thesis is not examining Incident Management Team effectiveness per se, it is important to include in this review team literature given that the focus of this study is not solely on individuals and work activity, and that people who work in high-consequence environments work in teams. This section reviews the way in which teams operate. Included in the discussion are two team effectiveness models and a number of empirical studies that have examined the way in which team inputs, processes and mediators, and outputs influence team effectiveness.

2.6.1 Teams

As mentioned in Chapter 1, the demands placed on operators to carry out high-intensity, high-reliability, high-performance work has led most of the organisations involved to set up team structures. As such, teams are complex and dynamic systems which exist within larger systemic contexts of people, tasks, technologies and settings (Ilgen, Hollenbeck, Johnson & Jundt 2005). The advantage of teams over individuals is that teams bring together a set of two or more people with specific roles and functions and distributed expertise who work interdependently and adaptively towards common and valued goals (Salas et al. 2007). While such diversity in teams can lead to increased adaptability and creatively, it also has the possibility to lead to tension and frustration (Savelsbergh, Heijden & Poell 2009). Such differentiation will be discussed later in this thesis.

When discussing teams, there are two distinctions between ‘taskwork’ and ‘teamwork’. Taskwork consists of the position-specific requirements of the

job, which are usually technical in nature (such as operating the technology required in incident management) and geared towards individuals. Teamwork, on the other hand, has more to do with the processes that individuals use to coordinate their decisions and activities, such as sharing information and resources to attain shared goals.

2.6.2 Team effectiveness models

Team effectiveness was initially conceptualised as a linear process (Hackman & Morris 1975). A sequence of inputs (i.e., team characteristics and environmental influences) influences team processes (i.e., team members' interactions and behaviours) and leads to outcomes (i.e., team members' attitudes, performance and satisfaction) (Hackman & Morris 1975; McGrath 1964). This type of framework is known as the I-P-O (input-process-output) model, as shown in Figure 2.1.

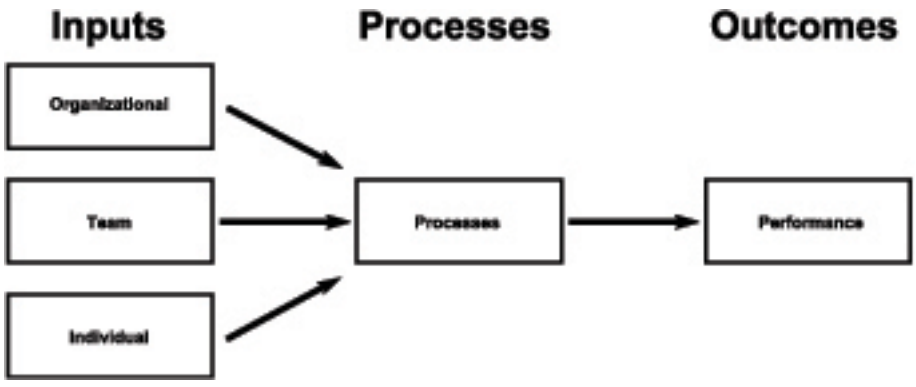


Figure 2.1 IPO model (Source: Mathieu, Maynard, Rapp & Gilson 2008 p. 413)

It has been argued in more recent team research literature that the I-P-O model is insufficient to account for team performance. First, a linear process does not allow for feedback loops. More recent models have established the importance of feedback loops and leadership in team

processes and performance (e.g., Borrill, West, Shapiro & Rees 2000). Second, it is argued that there are many mediating elements such as emergent cognitive and affective states that influence the procedure of inputs to outputs that are not processes. Marks, Mathieu and Zaccaro (2001) argued that 'emergent states are not processes in and of themselves, because they do not describe the nature of member interaction' (p. 358).

Figure 2.2 below, developed by Mathieu, Maynard, Rapp and Gilson (2008) encompasses the features of team effectiveness that has become prevalent in more recent times. As seen in the 'outer layers (i.e., high-level factors) influence in the layers (shown by solid lines in the left-hand side of figure) more so than the reverse although upward influences can be evident as well (shown by the dotted lines in the left-hand side of Figure)' (Mathieu et al. 2008 p. 412). While the IMO model considers feedback loops and emergent states, it will be argued later in this thesis that the IMO model also has limitations.

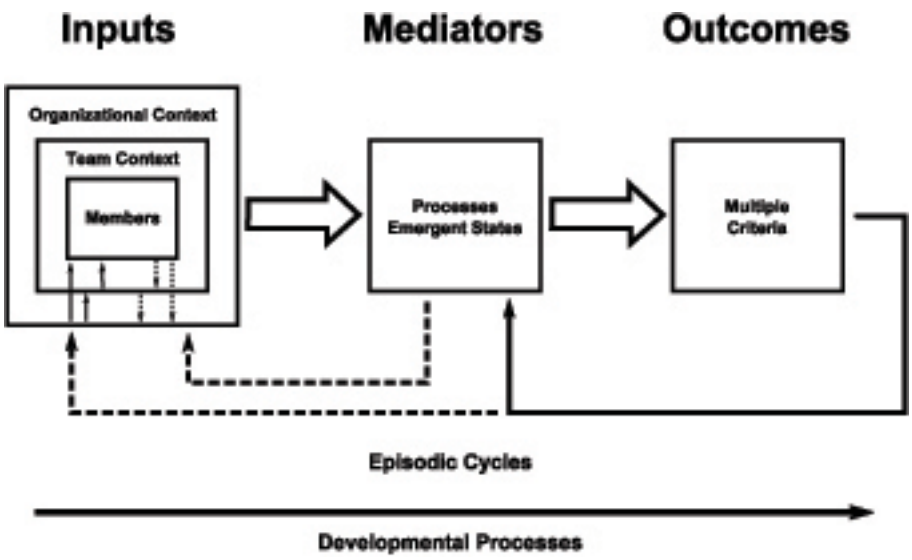


Figure 2.2 IMO model (Source: Mathieu, Maynard, Rapp & Gilson 2008 p. 413)

In discussing some of frameworks for team effectiveness, it is important to consider some of the inputs, processes and mediating variables, and outcomes within those frameworks that have an important role in team effectiveness.

2.6.3 Team inputs

Inputs are defined by Mathieu et al. (2008) as 'antecedent factors that enable and constrain members' interactions. These include *individual and team member characteristics ... team-level factors ... and organizational and contextual factors.* These various antecedents combine to drive team processes' (p.412) (emphasis in original).

There has been much attention given to group potency, shared mental models and schemas as being important drivers of team processes and performance. What is also of importance is to understand the elements that give rise to these concepts. For example, Hu and Liden's (2011) study found

that goal and process clarity and "servant" leadership were three antecedents of team potency which subsequently led to team effectiveness.

Servant leadership is defined as 'leadership behaviours in which leaders persevere to be "servant first" rather than "leader first" and put their subordinates' "highest priority needs" before their own (Greenleaf 1970, 1977 cited in Hu & Liden 2011, p. 851).

Hu and Liden (2011) findings showed that goal and process clarity enhanced team performance and team organisational citizenship behaviour (e.g., helping new co-workers and making suggestions to improve performance) by cultivating team potency beliefs. This result is particularly important because it supports the concept that having collective confidence in a team enables team performance. The results also showed that goal and process clarity contributed the most to the emergence of team potency when accompanied by leaders who promoted organisational functioning through high levels of employee trust in management, behaved ethically and empowered subordinates so as to facilitate team confidence. In contrast, when there was absence of "servant" leadership, the impact of goal and process clarity on team potency was either no longer positive or became negative.

Fisher, Bell, Dierdorff, and Belohlav (2010) examined potential antecedents of team mental models which are more commonly known as shared mental models. Shared mental models (or team mental models) allow all team members to interpret relevant information in a similar manner, share expectations regarding future events, and develop similar explanations for situations faced by the team (Mohammed, Ferzandi &

Hamilton 2010). Thus, they enable team members the capacity to synchronise behaviours in a coordinated manner.

Fisher et al. (2010) conducted their study with teams (n=32) that comprised of undergraduate and graduate students enrolled in a business course. The course involved students to be engaged in a 5 week business simulation that was designed to reflect a dynamic environment that included changes in technology, customer values and competitive demands. Each team was required to make 8 strategic decisions about activities and performance outcomes whilst developing a coordinated business strategy in relation to research and development, marketing, human resources and finance in their fictitious organisations.

Prior to the simulation participants were surveyed about their demographic information and during the simulation participants were surveyed to elicit information used to operationalise team mental model similarity and coordination amongst team members. The results suggested that team composition in terms of the cooperation and racial diversity were significantly related to team mental model and team mental model was also positively predictive of implicit coordination, which mediated the relationship between team mental models and team performance.

In terms of elements that drive team members' schemas, Rentsch and Klimoski (2001) investigated the antecedents of team member schema agreement and their indirect effects on team effectiveness with various (e.g., advice teams, action teams and project teams) work teams (n=41) in the Department of Defence organisation. Participants (n=315) were given questionnaires to complete. The questionnaires contained statements that represented, work schema agreement, team effectiveness, team experience

and demographic information. Rentsch and Klimoski (2001) defined a schema agreement as 'the degree to which team members' schemas are similar in content and/or structure' (p. 108). The results showed that team life experiences, team members' educational similarity and team size were significantly related to team member schema agreement, which in turn, influenced team effectiveness.

2.6.4 Team processes and mediators

Processes are defined by Marks et al. (2001) as 'the interdependent acts that converts inputs into outcomes through, cognitive, verbal and behavioral activities directed towards organizing task work to achieve collective goals' (p. 357). There is a significant amount of literature that has examined the processes and mediating variables amongst teamwork. McLennan, Holgate, Omodei and Wearing (2005), for example, examined decision making effectiveness in Incident Management Teams. The study utilised a mixed methods approach using experimental studies of team processes where team members managed simulated bushfires with limited communication channels. The data collection also involved analysing bushfire reports, conducting interviews (n=10) with experienced Incident Management Team personnel and observations (n=4 teams). The results from the study showed that high performing teams are skilled at information sharing, exhibit supportive behaviour, are flexible, provide team feedback and have team-mate knowledge including interpositional knowledge.

Interpostional knowledge is the knowledge that a team member has about another team member in terms of his/her talks, roles and appropriate behavioural responses in various situations. This type of knowledge can

enable a common understanding of the situation, which helps develop situation awareness and shared mental models.

Shared situation awareness or team situation awareness is defined by Shu and Furuta (2005) as where 'two or more individuals share the common environment, up-to-the-moment understanding of situation of the environment, and another person's interaction with the cooperative task' (p. 274).

Shared situation awareness and shared mental models are emergent states. Emergent states can be cognitive, motivational and affective states that are 'dynamic in nature and vary as function of team context, inputs, processes, and outcomes' (Marks et al. 2001, p357). Emergent states also include collective efficacy and cohesion. As these emergent states are part of people's affective experiences, as argued in Chapter 1, they have been reviewed in detail in previous sections in this chapter.

2.6.5 Team outcomes

Team outcomes are comprised of two elements: team performance and team viability. Antoni and Hertel (2009) defined these elements:

> Team performance refers to the degree to which team outputs meets or exceeds the performance standards...Team viability refers to the degree to whether team performance processes maintain or enhance the capability and willingness of the team to continue their collaboration and whether the team experiences satisfy members' needs (p. 255).

There are a number of studies that have examined the linkages between coordination and team effectiveness. Ross, Rink and Furne (2000), for example, conducted a study with primary health care professionals. Data

was collected using time diaries, teamwork questionnaires and semi-structured interviews. The results from the study found that when primary health care teams had good coordination, service duplication was reduced and specialist skills were more streamlined.

Other studies in healthcare have examined the linkages between multidisciplinary teams and team effectiveness. For example, Taylor, Blue and Misan (2001) conducted a case study with rural primary care teams. Data was collected through interviews (n=73) and questionnaires across four sites. The results showed that when general practitioners shared their workload with other health professionals, their job satisfaction increased and knowledge of skills were enhanced. Thus, this study showed there were beneficial outcomes for individual team members' skills and affective experiences. As mentioned in Chapter One (and shown later in findings chapters) that people's affective experiences have an important role in work activity and, therefore, teamwork.

2.7 Chapter summary

This chapter has reviewed a number of studies that investigated the linkages between affect and individual and collective performance. The studies showed that when people are engaged in work activity that is both productive and meaningful it contributes to one's positive affective experiences, which in turn assists in enhancing interpersonal skills, knowledge transfer processes and flexible thinking. In addition, people's affective experiences are transferable amongst group/team members, and this can influence the dynamics of the team and therefore collective performance.

This chapter also reviewed studies that examined stress and burnout in work activity. These studies showed that when working in high-consequence environments people are susceptible to stress and burnout because high-reliability organisations are characterised by cognitive and emotional demands. Such demands can influence people's wellbeing which in turn can lead to poor performance.

From the studies reviewed in this chapter that examined the influences of both self-efficacy and collective efficacy on performance, the findings revealed that there are linkages between self-efficacy and collective efficacy and those efficacy beliefs are socially constructed through supportive behaviours (e.g., feedback) and mastery experiences. In addition, when people experience a heightened sense of self-efficacy and collective efficacy it can assist with adversity and enhance collective performance. What was also found is that when a team is encouraged to communicate and cooperate and has high interdependency, this fosters collective efficacy, which in turn positively influences the collective performance of the team.

The limitations to these studies are that many used self-report measures only and did not consider the broader systemic issues that can influence people's affective experiences and performance. What these studies have shown is that affect is important to consider in work activity, especially given that positive affect can assist in coping with adversity which is particularly important when working in high-consequence environments where it is emotionally, cognitively and physically demanding.

The final section reviewed team literature. What can be drawn from the studies is that there are a number of elements that contribute to team

effectiveness. Team inputs (e.g., team size and team members experience) drive the team processes and mediating variables (e.g., communication and shared mental models), which in turn leads, to performance and affective outcomes (e.g., good coordination and job satisfaction).

3

CHAPTER THREE
RESEARCH DESIGN

3.1 Introduction

The previous chapter outlined published research relating to the theoretical development that has already occurred, and is relevant to this study. An important focus of this thesis is the lived experience of people who work in dynamic and high consequence environments and, in particular, fire and emergency management. What is also of interest are the ways in which work groups, and the cultural elements within those work groups, influence and are influenced by people's affective experiences. The aim of this thesis is to explore the linkages between both individual and collective affective experiences and activity from a sociocultural perspective. In order to understand these connections the following research questions were posed:

1. What are the lived experiences of people who work in incident management teams?
2. What cultures can be identified within incident management?
3. What affective experiences are influenced by organisational culture?

4. How can the role of individual and collective affect be conceptualised?
5. What are the ways in which affect intersects with a sociocultural context to influence Incident Management Team performance?

Neuman (2010) advocated that researchers need to be explicit in their research design so that readers can determine the credibility of their research. To assist the reader to understand the design and the methodological decisions made in this study, the pronoun 'I' will be used throughout this chapter to discuss my involvement in the study and the methodologies employed. This chapter discusses:

- the researcher's stance and ethical considerations
- the kind of methodological approach that was considered appropriate for the research
- the evaluation of the research by describing the verification processes used in the study to maximise trustworthiness and authenticity
- an overview of the research process
- the processes involved in recruitment of participants, sampling, data collection and analysis, and
- the limitations of the study.

3.2 Researcher's stance and journey

Researchers need to state their beliefs about epistemology as the choices made will direct the research process and methodology (Creswell 2009). It is therefore necessary for me to declare my interest, experiences and beliefs as they relate to this study.

I have been a research assistant at the University of Tasmania since 2001 where I assisted with projects that investigated the ways in which communication and coordination in collaborative work practices might be enhanced. The participants for the research assistant work included air traffic controllers, paramedics and accident and emergency staff. Working as a research assistant familiarised me with organisations (i.e., aviation, accident and emergency medicine) that are prime examples of high-reliability work.

By conducting in-depth interviews and observing participants whilst undertaking their work activities, I gained insight into the complex and demanding nature of these forms of work activity. I observed the intensity of the work where people had to deal with compressed timeframes, make calculated decisions and think of things simultaneously. I asked myself the questions: How do these people cope in such situations? and How does working in such environments affect people's work-life balance? I wondered to what extent their affective experiences influence and are influenced by the work they do. I wanted to learn more about how people manage such dynamic environments. This is when I began reviewing literature that was related to these domains, and became interested in learning more about them.

Again through the University of Tasmania, in 2006 I began working as a research assistant with the Bushfire Cooperative Research Centre where I became immersed in fire and emergency management. At this time I decided this was what I would like to focus my PhD study on, given the importance of the work. Fire and emergency management is particularly important given the Australian context where the typography and

vegetation, coupled with climatic changes, is a dangerous combination which feeds fires. In Australia, in terms of disasters, bushfires 'are associated with the greatest loss of life' (CSIRO 2010 p.10). The research process I undertook will be discussed later in this chapter.

The complexity of the phenomenon being investigated required a methodological approach that incorporated the analysis of work practices. Interviews provided me insights into the affective experiences of people who work in fire incident management, and how their affective experiences give meaning to their work activity.

As a social science researcher, I draw on the complexities of people's experiences, where the relationship between the inquirer and the known will be orientated by the production of reconstructed understandings of the social world (Denzin & Lincoln 2000). Social constructivists acknowledge that meaning, and beliefs are created and constructed through social interaction with others. To develop theory through constructivism means listening to participants' lived experiences with openness to feeling (Charmaz 2000). I support the work of Burkitt (1999) and Vygotsky (1978) by also acknowledging that emotions are interconnected with actions and cognition.

3.3 Qualitative inquiry

A review of the literature undertaken for this study showed that there is an expansive interest in researching affect and work activities that have taken place over many decades, as discussed in Chapter 1 and Chapter 2. What is also evident is that many of the research paradigms that investigate the linkages between affect, cognition and activity tend to focus on the

individual and the environment as separate entities (Makitalo & Launis 1998; Valsiner & van der Veer 2000). Moreover, a large focus has historically been based on medical models where many researchers favour a reductionist approach. Data collection methods, for example, are generally self-report measures and/or observational check lists that produce quantifiable results. As Fineman (2005) advocated, 'when feeling and emotion are encased in the priori formats...they are instantly distanced from that is experientially meaningful' (p. 7). Thus, it is argued, that such measures are narrowly focused and do not take into account human activity as a whole.

A qualitative research design was deemed the most appropriate for this study because this study explores 'the dialectical interchange between human responsiveness (feeling, perceiving, behaving)' (Zuboff 1988, p. 423). Qualitative inquiry represents a legitimate mode of social and human science exploration without apology or comparisons to quantitative research' (Creswell 1998, p. 9). Data gathered by qualitative inquiry 'attempt to capture and understand individual definitions, descriptions and meanings of events' (Burns 2000, p. 388). I used qualitative inquiry because this type of approach allowed me to identify the essence of the participants' experiences and gain an understanding of their experiences through their perspective (Creswell 2009). In addition, I wanted to delve deeper into fire incident management and find out 'what is the nature of this phenomenon as an essentially human experience' (van Manen, 1990, p. 62). Moreover, it is also important to put individual and collective experiences into context so a framework for this was also needed. To assist in constructing the ways in which individual and collective activities

interconnect, I have employed Layder's (1993) research map in this thesis and will be discussed in the next section.

3.3.1 Layder's (1993) research map

In order to develop rich insights into the phenomena (i.e., affect in work activities), I have used Layder's (1993) research map as a tool for gathering data across all aspects of people's experiences (i.e., context, setting, situated activity and self). This is important because, according to Layder (1993), 'social structure interweaves with activity' (p. 56). That is, the macro (e.g., context and setting) and micro (e.g., self-identity) features are interdependent with each other through the medium of social activity itself. Table 3.1 provides a summary of elements that refer to the levels of social organisation which are closely interrelated, and the way in which I have focused on these levels in this thesis.

Layder's (1993) research map allowed me to identify and focus on those elements which were of interest or importance, and those that were not, in regard to the interrelation between the macro and micro of people's affective experiences and the relationships with work activity. Discussed below are the interrelations between self and situated activity; situated activity and the nature of setting, specifically the setting and macro contexts of social activity (see Layder 1993 pp. 74–106), that are relevant to this study.

Table 3.1 Layder's (1993) research map

	Research element	Research focus	Focus in this thesis
HISTORY	**CONTEXT**	Macro social forms	Structure
	SETTING	Immediate environment of social activities	Work groups Activity Culture
	SITUATED ACTIVITY	Dynamics of face-to-face interaction	Collective experiences Collective affect
	SELF	Biographical experience and social involvements	Participants' lived experiences and perceptions of work activity, affect and performance

Source: Layder 1993, p.8

NB: Although the above map is organised with 'context' (macro) at the top and 'self' (micro) at the bottom these levels are not organised by importance or complexity or indeed separated in this way but used as a snapshot.

An important focus in this research is the interplay between social and psychological factors, and whether the concept of self and how people perceive what they do influences affect and performance. Data collected on *the self* and *situated activity* will be discussed in Chapter 5. What Layder (1993) conceptualises as *contexts* includes the wider social situation and structure of work organisation. Such elements will be discussed in Chapter 4. In this thesis, *the setting* focuses on work groups and work activity. Chapter 6 will discuss the emotional involvement that the setting demands of the actors including the characteristic forms of power and authority and organisational culture (e.g., norms, values and beliefs) and how they influence people's performance.

S*ituated activity* identifies the interactions individuals have with others in their work activity. As this thesis is to explore and understand the affective

experiences of incident management personnel beyond the individual, *situated activity* and the nature of *the setting* is very pertinent. Chapter 7 will discuss the linkages between collective experiences, collective affect and teamwork.

History is important in this thesis because from a sociocultural perspective history, in part, is apparent in all work activity. *History* 'represents the temporal dimension through which all other elements move' (Layder 1993 p. 101). Chapter 6 will discuss the way in which shared histories of experience influence incident management work.

In using Layder's (1993) map, we can more easily conceptualise the ways in which the individual, and collective activities interweave with contextual features that may influence people's affective experiences. As Layder (1993) advocated:

> Research should not concentrate on the internal dynamics of interaction to the exclusion of the more macro elements…on the other hand we should not neglect the analysis of meaningful social activity and the way in which it is centrally involved in the formation and routinisation of macro phenomena (p. 106).

Not only is it pertinent for social inquiry to report a holistic view of social behaviour, it is also important that certain strategies be incorporated into the research design, to ensure the research is valid and reliable. This will be discussed in the next section.

3.4 Evaluation of the research

All research is concerned with developing valid and reliable findings in an ethical way. It is crucial to ensure the collection of data is carried out accurately because interpretations and judgements are based on data

(Merriam 1998). Creswell (1998, 2009) argued that good models of qualitative inquiry demonstrate the rigor and the time-consuming nature of the approach. Guba and Lincoln (1994, 2000) argued that trustworthiness and authenticity are important in research design. It is important to have criteria with which to evaluate the approach and credibility of the findings, so there are no hidden inaccuracies in the conclusion that may cause the analysis to be incorrect (Hammersley & Atkinson 1995).

There are aspects utilised in this study to provide verification of the study's trustworthiness and authenticity. The following table provides a summary of the criteria I used to measure the trustworthiness and authenticity of the research, and the processes used in this thesis to meet the criteria.

Table 3.2 Summary of trustworthiness and authenticity

Evaluation criteria	Rationale	How it is addressed in this thesis
Researcher's stance reported (Creswell 1998, 2009; Merriam 1998; Denscombe 1998).	It is important for researchers to declare their beliefs about truth and knowledge.	I have outlined my stance in this chapter.
Member checks (Janesick 2000).	If there are any uncertainties, it is important to be able to clarify with participants, and to be able to gather more specific information if required, to enable in-depth description.	I was able to make phone calls to participants to check and clarify the data, and where necessary gather more data on specific information. I showed (and discussed) emerging themes with participants. I presented findings at a number of conferences.
Rich, thick description (Merriam 1998; Janesick 2000).	Rich thick description provides the ability to generalise in qualitative inquiry. Readers need to be able to determine how closely the situation matches the research in question, therefore determining whether findings can be transferred.	Interviews were often conducted in the time frame of 45–60 minutes. In some cases it was necessary for me to conduct follow-up interviews to gather more data on a specific area. Common themes were identified and checked across interview data. Excerpts of transcripts are included in this thesis. I believe I have provided enough description so that readers will be able to determine how closely their situations correspond with this study.

Evaluation criteria	Rationale	How it is addressed in this thesis
Audit trails (Merriam 1998; Seale 1999; Janesick 2000).	It is important to provide detailed data gathering procedures.	I have described in detail how the data was collected. All interviews were audio recorded. All interviews were transcribed. Coding was reviewed and checked. I have also described how categories were derived.

3.5 Ethical considerations

Social inquiry raises many ethical issues because participants generally reveal copious amounts of information about their lived experience that might not normally be made known (Barnes 1997). Overwhelming feelings of both present and past experiences may arise ‘even if the topic appears to be routine or benign’ (Merriam 1998, p. 214). As a researcher, it is my responsibility to recognise the vulnerability of each participant, develop a trust with participants and uphold the veracity of the research (Renezetti & Lee 1993; Creswell 2009).

Ethics approval was sought from the University of Tasmania Human Research Ethics Committee. Recruitment of participants is explained in Section 3.7.1. The information sheet and consent form for this study are in Appendix 1. These documents provide full details of the requirements and risks associated with the study. To ensure the risk was minimal, the interviews were conducted with the following protocol.

- All personnel who were willing to participate were asked to read the information sheet, which provides an overview of the study and the potential risks involved.
- The participants were informed that the study was entirely voluntary and they were free to withdraw from the study at any time without consequence.
- During the interview, if the interviewee seemed hesitant or uncomfortable, they were reminded they did not have to answer the question.
- There were times when the interviewee was happy to provide information but did not want to be recorded, and so the recording was paused.
- At the completion of the interview, I asked the participant if they were still happy to participate in the study and, if they were, they were then asked to sign the consent form.
- Participants were informed that confidentiality will be maintained by not revealing participant identities in any published material arising from this study.
- All data collected was de-identified. Ethically I am required to store de-identified data for a minimum period of five years after the publication of the thesis. All data has been stored in locked filing cabinets or as password-protected files in a secure (locked) room at the University of Tasmania, Faculty of Education. When the data is no longer needed, electronic files will be erased and printed material shredded.

3.6 The research process

This study has been conducted part-time over seven years, and in three phases which are described below. Table 3.3 below provides an outline of the three research phases discussed previously. It outlines the specific tasks I undertook and the timeframe for the phases.

Table 3.3 Research phases

Phase	Purpose	Timeline
Phase 1	• Review of literature discovering the gaps in the literature • Drafting of literature review • Familiarisation in high-consequence environments	2005–2006
Phase 2	• Immersion in fire and emergency management: incident management teamwork • Conducting interviews • Preliminary data analysis • Drafting chapters	2006–2007
Phase 3	• Review of further literature • In-depth data analysis • Writing up thesis	2008–2012

3.6.1 Phase 1: Identifying the problem

In Phase 1, an initial review of literature was conducted to provide insight into high-consequence environments, the work people do (e.g., high-intensity and high-performance) and the problems that people encounter when working in such complex environments.

3.6.2 Phase 2: Immersion in fire and emergency management and data collection

In Phase 2, the global research project to which I was assigned led me to interview experienced incident management team personnel (n =70), who managed bushfires and structural fires. Part of the data collected for that project is used in this thesis.

During this phase in 2007, a rural/urban interface fire in Tasmania began and so I was able to observe first hand an incident management team in operation. A number of wildfires followed in Victoria and Tasmania, which through my work, provided me with the opportunity to observe incident management teams (n=5) operating over the course of their shifts. It should be noted that I was a researcher observing Incident Management Teams in action not conducting participant observations. Data from these observations framed part of a wider study within which I was employed.

After the fire season in 2007, incident management team simulations (n=12) were held in Victoria, Queensland, New South Wales, ACT and Tasmania. In the exercises, the Incident Controllers and other key personnel (i.e., operations officers, planning officers and logistics officers) were managing 25–30 personnel. Again through my work, undertaking these observations provided me with an opportunity to gain further insights into incident management teams, because the simulations were held in natural environments; that is, they were conducted in incident control centres in local fire stations. During this phase I also did the preliminary analysis. Details of the analysis are outlined in Section 3.8.

3.6.3 Phase 3: In-depth data analysis and writing up thesis

In Phase 3, I further developed my understanding of the interconnection between individual and collective experiences embedded in context. In-depth data analysis allowed me to explore the data further from the original, descriptive inductive analysis to discover the relationships between one node and another, and develop a conceptual framework. In doing so, a model that links individual and collective experiences of affect into models of teamwork was developed. The final writing of the thesis was also completed.

3.7 Methodology

This section describes the method and tool employed to collect the data for this thesis.

3.7.1 Recruitment of participants

Potential participants were sent an email from the research contact within the agency (i.e., a third party) and asked if they would be interested in participating in the study. If personnel were interested in participating, they were guided to contact me. The third party was advised that they would not be given any information about who agreed to participate in the project.

3.7.2 Sampling for interviews

Purposive sampling was used in this study. In purposive sampling, the primary consideration ‘is the judgement of the researcher as to who can provide the best information to achieve the objectives of the study’

(Kumar 1999, p. 162). By purposively selecting the sample, exclusive and detailed information can be obtained to uncover the phenomenon being investigated. To assist with sample selection for interviews, the criteria for potential inclusion in the sample group required all participants to:

- be willing to be interviewed more than once if required
- work in fire and land management agencies
- have experience with working in incident management teams.

3.7.3 Data collection

The interview data was collected from four states in Australia and across seven different agencies (see Table 3.4) with incident management personnel (n=70) who had various roles in incident management teams (see Table 3.5). The interviews were conducted face-to-face or over the telephone and were of 45–60 minutes in duration. Experienced incident management team personnel (n=70) were asked to talk about their collective work activity and what they were experiencing when engaged in that work. All interviews were audio recorded. The recorded interviews provided a twofold purpose: first, to record exactly what was said and to be able to listen to the participants' stories more than once in order to be immersed in the data, and second, it allowed me to concentrate on what was said at the time of the interview rather than being distracted with note taking.

Table 3.4 Demographics: states and agencies

Tasmania		Victoria			New South Wales	Queensland
TFS	**PARKS**	**MFB**	**CFA**	**DSE**	**NSWRFS**	**QFRS**
10	9	8	12	10	9	12

Table 3.5 Demographics: participants' roles

Incident controllers	Operations officers	Planning officers	Logistics officers	Other (e.g., situation officers, deputy ICs)
25	16	13	11	5

3.7.4 Interview questions

Interviews provide rich in-depth recollections of people's emotional experience (Denzin & Lincoln 1994) therefore yielding thick descriptive data (Goetz & LeCompte 1984) where the 'results are complex and rich' (Mark 1996, p. 212). The results are presented in a narrative format in this thesis and include extracts of the participants' own words (Kumar 1999; Burns 2000).

Semi-structured interviewing techniques provided some guidelines prior to the interview commencing (Mark 1996; Merriam 1998) and also allowed participants to talk freely about their experiences in their complex world of

fire and emergency management (Isaac & Michael 1987; Burns 2000). A set of the interview questions that were used to guide the interview process in this study can be found in Appendix 2.

In order to gather relevant data, it is important to ask different types of questions that will produce different information. Demographic questions were used to gather specific background information and also to be asked as non-threatening ice-breaker questions (Fetterman 1989; Merriam 1998). An example of demographic and ice-breaker questions that assisted in this study are:

- Can you tell me about your history of work experience?
- How long have you been with [organisation]?
- How long have you been part of an Incident Management Team?

'Survey' or 'grand tour' questions were also asked so that participants could portray a comprehensive account of their work activities and 'to provide the thick description that builds toward an overall picture' (Rubin & Rubin 1995, p. 11) that provides the basis of a grand tour (Spradley & McCurdy 1972). An example of the grand tour questions that assisted in this study are:

- Can you give me a specific example of incident management that worked really well? What was it that happened?
- Can you give me a specific example of incident management that didn't go so well? What was it that happened?
- One of the things that has been found to be important in other research is 'collective confidence'. In terms of an incident that worked well, to what degree do you think the team itself had

an enhanced sense of its own collective capability? Was this something you think might be present or not? If yes, what created it?

3.8 Data analysis

There were several steps involved in preparing and analysing the data. These stages are outlined in detail in the following steps:

3.8.1 Step 1: Organise and prepare the data for analysis

All interviews were de-identified and then transcribed. Then I imported the transcripts into NVIVO 8 which is a software program for qualitative analysis. The data was arranged into folders and sets with attributes (i.e., demographic information) being created in cases.

3.8.2 Step 2: Code words, phrases, sentences and paragraphs

I wanted to conduct my analysis in accordance with Zuboff's (1988) ethical stance which meant listening to data without having any preconceived judgement, just as I had done in the interviews I conducted. I then analysed the data according to Tesch's (1990) system of de-contextualisation and re-contextualisation. In effect, this means segmenting the data, sorting the data, organising systems and exploring connections. In accordance with qualitative research, the codes and categories were developed from the participants' responses and literature reviewed (Miles & Huberman 1994; Tesch 1990; Patton 2002; Creswell 2009).

Initially using five transcripts (hard copies), I coded the interviews by reading the transcripts and listening to the audio at the same time. I was looking to gain a general sense of what the participants were saying and their tone of voice. What is central when analysing the data is to try and uncover key aspects in the participants' stories that are important to them. I also paid particular attention to key words indicating emotion (e.g., feel, sense, think). In this process, I was developing themes or as van Manen (1990) refer to 'structures of the experience' (p. 79).

I wrote my comments and reflections in the margin of those five transcripts. This initially took some time because not all the same questions were asked to the respondents as some interviewees spoke freely without initiating the conversation by questions, and others had answered the next question with the previous question. Some questions were reworded to allow understanding.

3.8.3 Step 3: Begin a detailed analysis

To begin the detailed analysis, I looked at my initial coding for the five transcripts to see where there were common codes across the transcripts. I looked to see if one category overlapped into two or more concepts and if the descriptors or codes I had used had similar meanings. For example, on some transcripts I had used 'enjoyment' and other transcripts I had used 'elation'. I reviewed the theoretical literature to reduce these categories.

Once I had narrowed down the codes, I put the material from the transcripts with the same codes together. Here I began to look at which ideas went together to form clusters. This began an organising system so that each cluster became a major coding category and the individual

themes became sub-categories. There are six major coding categories: demographics, individual lived experiences, team activity, work activity, organisation and culture. Then, within those six major coding categories, there is a set of sub-categories. Then there were more categories within these sub-categories. Table 3.6 provides an example of the coding.

Table 3.6 Example of coding

Major coding categories	Sub-categories
Demographics	• role/position • experience in IMT • experience in industry
Individual lived experiences	• pleasant experiences ▪ joy ▪ surprised ▪ not surprised/anticipation • unpleasant experiences ▪ anger ▪ fear ▪ surprised (not in a good way)

When the categories were completed with the five working transcripts on paper, it was time to develop nodes, which are grouped together in the researcher's classification system in a tree structure within NVIVO8 (see QRS 2006-08). The working transcripts were then coded within NVIVO8. The rest of the interview transcripts were coded manually (as previously described) then entered in NVIVO8. These steps organise the data and develop the initial level of analysis. Full details of the coding organising system is in Appendix 3 and an example of coded data is in Appendix 4.

3.8.4 Step 4: Analyse the data within NVIVO8

While I was organising the data and developing my initial level of analysis, I noticed collective terms (e.g., we, our, them, they, their) were frequently used so I began exploring the data by using 'text search queries'. This led me to develop another set of categories based on group identification.

This initial level of data analysis was descriptive, working inductively with the transcripts to build up a picture of participants' individual and collective worlds. With these steps completed, I was able to explore the data further. In exploring the data further, I looked at the relationships between one node and another and wrote memos to assist me in developing a deeper analysis. Memo writing is a valuable means of recording the relationships amongst themes (Ryan & Bernard 2000). This is because memo writing allows the researcher to write down their thoughts as they come to mind and develop a conceptual framework (Strauss & Corbin 1990).

In developing emerging themes I also participated in industry conferences where I was able to test out my ideas and discuss with industry practitioners (see Table 3.7).

Table 3.7 Industry publications

Conference papers
Douglas, J. & Salter, P. 2009, 'The roles of work-related emotions and leadership in creating high performing teams', *AFAC conference*, Gold Coast, QLD. Australia.
Douglas, J. & Short, A. 2008, 'How well are your Incident Management Teams Coping'? *AFAC Fire, Environment & Society Conference*, Adelaide, Australia.
Douglas, J. 2007 'The role of collective efficacy/confidence and its importance in Incident Management Teams' (IMTs) work activity: Preliminary findings of a PhD', *AFAC conference*, September, Hobart, Australia.
Posters
Owen, C. Douglas, J. & Hickey, G. 2009 'Information flow and Incident Management Team effectiveness', *AFAC conference*, September, Gold Coast, QLD. Australia.
Douglas, J. 2007 'The role of collective efficacy/confidence and its importance in Incident Management Teams' (IMTs) work activity: Preliminary findings of a PhD', *AFAC conference*, September, Hobart, Australia.
Fire Note
Douglas, J. 'Investigating perceived teamwork effectiveness in Incident Management Teams', Issue 39, September 2009.

3.9 Limitations of the study

There are five primary limitations to this study:

1. Only fire response agencies were chosen.
2. The type of incidents managed were predominantly bushfires.
3. Only interviews were used.
4. The data was not collected whilst participants were undertaking their work activities.
5. The time lapse between collecting data and writing up the thesis

The first limitation to this study is that only fire agencies were chosen. While these organisations have predominant roles in managing fire incidents, and provide an excellent representation of agencies that work in demanding and complex environments, there are also other agencies involved in fire incidents. For example, there are times when police and the Department of Human Services are represented in incident management teams. Police are also required for road closures and traffic management and the Department of Human Services plays a major role in the recovery phase of an incident.

The second limitation to this study is that data was predominantly based on managing bushfires. In saying this, managing bushfires is important in the Australian context as will be discussed in the next chapter. In addition, bushfires management is an excellent representation of incident management that is characteristic of high-intensity, high-reliability, high-performance work. This is because bushfires are fast moving and can change direction with gusty winds, increasing temperatures and low humidity levels.

The third limitation to this study is that the data was collected by only using interviews. While recognising this limitation, it is also true that there have been other studies (e.g., Tams 2008) that have only used interviews yet have provided a rich and telling story of people's lived experiences.

The fourth limitation to this study is that participants were asked to provide examples of, and describe, fire incidents that were managed really well and fire incidents that were not managed so well. In doing so, it should be pointed out that participants might be limited by their memory due to working under stress (Rutledge et al 2009) and the emotional colouring of those events. However, from a sociocultural perspective the way in which people engage in sensemaking is important. It should also be noted that other studies (e.g., Zuboff 1988) that have explored people's experiences have also utilised in-depth interviews because this provides a rich source of information and yields beneficial material to develop theoretical models.

The fifth limitation to this study is that the thesis was written over 7 years, with the data being collected in 2006-2007. Thus, the time lapse between data collection and writing up the thesis has the potential to affect the generalisability of the findings. It should be noted, however, that many industry personnel were consulted in the final write up phase and the findings are arguably pertinent.

3.10 Protocols used in this thesis

In this thesis, excerpts of transcripts have been used to demonstrate findings. As anonymity is important, the names of the participants and

place of incident are de-identified by using generic labels such as (name of colleague) and (name of place). Other protocols used in this thesis:

- / denotes pause
- ... indicates a break in transcript

Where words have been added to excerpts to assist with understanding, they are marked with [ ].

3.11 Chapter summary

This chapter discussed the research design that was regarded as appropriate to this study. The research design chosen was one that attempted to explore, from the participants' perspective, how affect, identity and work activity are embedded in context (i.e., structures and cultures) and how affective experiences influence, and are influenced by work activity. This chapter also outlined the research process and discussed the protocols that were used to ensure any risk to the participants was minimised.

The research method for this study involved semi-structured interviews which provided guidance for the interviewer and at the same time allowed the interviewees to speak freely. Analysis of the data involved building categories from participants' responses and literature reviewed. The evaluation of the research and limitations of this study were also discussed.

4

CHAPTER FOUR
FIRE AND EMERGENCY MANAGEMENT

4.1 Introduction

The previous chapter discussed the research design of this thesis. The aim of this chapter is to discuss the context in which fire and emergency management personnel work, and provide the reader with an understanding of the structures within emergency management, and the challenges that personnel face when managing an emergency.

This chapter discusses:

- the elements that contribute to bushfires in Australia
- bushfire management in Australia (e.g., prevention, preparedness, response and recovery)
- jurisdictions and land tenure in terms of managing and responding to bushfires
- the Australian Inter-service Incident Management System (AIIMS) and the kind of work activity performed by key incident management personnel
- the training required to become a firefighter and to be able to be a work in an incident management team.

4.2 Elements that contribute to bushfires in Australia

Australia has always been prone to bushfires; however, in recent times, fires have become more prevalent across the continent. This is because the topography and vegetation, combined with climatic changes (i.e., longer and more intense drought periods with lower average rainfall and increased temperatures), is a lethal combination which fuels fire. The topography in Australia consists of flat dry grasslands, some of which are farmlands, as well as hilly and mountainous areas, which in most cases are comprised of thick dense forests. Flat dry grasslands, especially with high winds, can increase the speed of the fire. In addition, steep and dense terrain can also create some difficulty for firefighters to access.

The vegetation in Australia's harsh dry environment has also created fuel for fire. One of the major contributors of fuel is eucalypt (which has a number of species) that populates the country. The bark of the eucalyptus tree is flammable and loosely attached to the trees, and the green leaves of the eucalypt contain highly flammable oils and resins, hence, fuel for bushfires.

Figure 4.1 illustrates that the tropical savannahs of the north tend to burn mainly in the winter–spring period; in the southern regions, where forests are dominated by eucalypt, fires occur in summer.

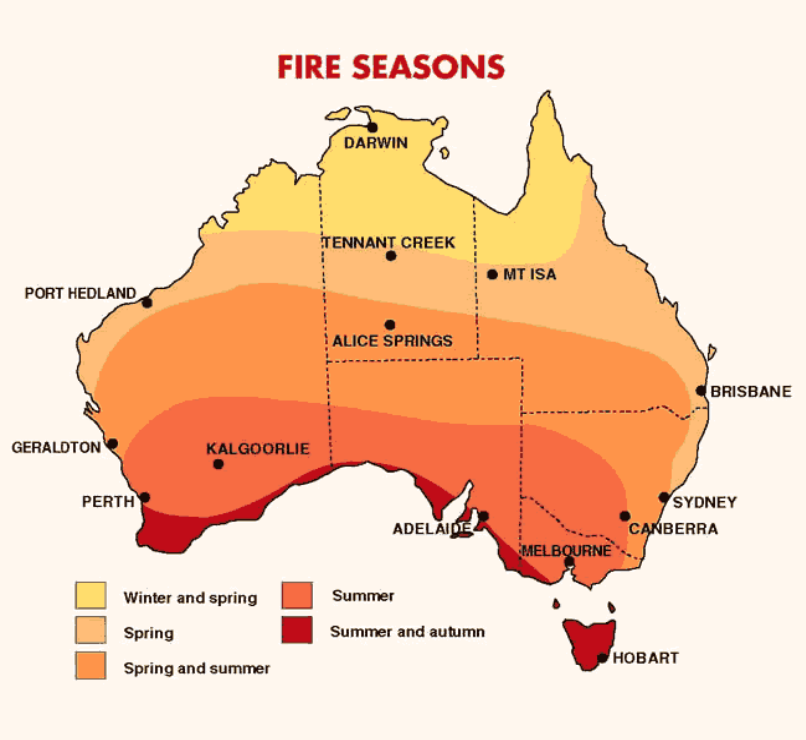


Figure 4.1 Fire seasons across Australia
(Source: Bureau of Meteorology)
http://www.bom.gov.au/lam/climate/levelthree/c20thc/fire.htm

Bushfire is a term used by Australians to describe unplanned/uncontrolled fires that occur in bushland, national parks, forests and scrub. Therefore, this term is similar to what other countries might label as wildfires. On average, each year in Australia approximately 50 million hectares of land is damaged by bushfires and lightning strikes. Accidents connected to burning off, campfires and machinery are the most common causes of ignition. In terms of natural disasters in Australia, bushfires are related to the greatest loss of life (CSIRO 2010).

According to Hennessey, Lucus, Nicholls, Bathols, Suppiah and Ricketts' (2005) report, the number of extreme forest fire danger days, in some regions of Australia, is anticipated to increase by up to 20 per cent by 2020

and up to 60 per cent by 2050 which poses another problem. With more fires occurring, days will be limited 'in which to mitigate their effect through prescribed burning' (CSIRO 2010, p. 5). Fuel reduction, prescribed burns and fire trail maintenance is as an important part of fire management, designed to maintain biodiversity and reduce risks of bushfires.

4.3 Bushfire management in Australia

The following section outlines the authority and coordination of bushfires in Australia. Included in this section are the strategies that are implemented to manage the bushfires. As the focus of this thesis is about the lived experiences of incident management personnel (who work in incident management teams), it is important to understand the organisational context in which these people work. Thus, the remainder of this chapter will address the aspects that are associated with bushfire response.

4.3.1 Authority and coordination

The protection of human and animal life, assets and the environment are the primary responsibility of state and territory governments. As there are a number of agencies (e.g., fire agencies, land management agencies and state and emergency services) that work in partnership, it is important to have a standardised approach to managing bushfires and the destructive effects they have on life, property and the environment. Emergency management arrangements have been made at national, state (and territory), and local government levels to develop an approach that includes *Prevention, Preparedness, Response and Recovery (PPRR).*

Strategies to prevent and prepare for bushfires include bushfire mitigation, firefighter training, community education and awareness, and safety and protection programs. Bushfire response strategies include warning messages and public information, firefighting, coordination arrangements for evacuation centres and assessing the damage of the bushfires. In terms of recovering from bushfires, there are a number of disaster relief and assistance strategies such as financial assistance, managing public appeals and identifying activities to rebuild communities. Identifying the way in which recovery operations can be improved in the future is also included in this phase (Commonwealth of Aust 2009).

4.3.2 Responding to bushfires

The Australian landscape is made up of built-up cities, well-populated country townships, country hamlets and farming regions that are sparsely populated. While some of the land is private forest and silviculture, there are other areas that are public land, each with custodian rules which include a history of ‘your fuel, your fire.’

Fires that occur on public land (i.e., state forest, national parks and protected public lands) are controlled by land management agencies. Fires that occur on private land are controlled by fire agencies. Within fire agencies there are firefighters who respond to fires in urban areas and those who respond to rural areas. Urban areas are attended by employed (also known as career) firefighters. The fires they respond to include structural (e.g., private buildings and commercial buildings) fires and vehicle fires. They also respond to rescues and provide chemical and hazardous material management. Rural areas are attended by a smaller

proportion of employed firefighters with the majority of firefighters being volunteers.

4.3.3 Control and support roles

During the management of fires, the agency responsible for managing an incident is the 'control agency' and all other agencies that assist the control agency are the 'support agencies'. For example, the *Emergency Management Manual of Victoria* (2003) provides a clear definition between the two roles. A control agency is:

> the agency nominated to control the response activities for a specified emergency [and] a government or non-government agency which provides essential services, personnel, or material to support or assist a control or another support agency or persons affected by an emergency (is the support agency) (pp. 3,4).

Urban and rural fire agencies and land management agencies work together in combat (i.e., firefighting) and support roles. Broader emergency support agencies, however, can include police, Department of Health and Human Services and State Emergency Services. There are also other support agencies such as water authorities, electricity authorities and telecommunication utilities that provide critical infrastructure.

When fires spread and multiple agencies are required to attend, managing the incident becomes more complex. This is because each agency has its own organisational (e.g., roles, goals and objectives) and cultural (e.g., norms values and beliefs) differences. The cultural similarities and differences in incident management will be discussed later in this thesis.

4.3.4 Incident management framework

As each state and territory has its own control and coordination arrangements, in order to manage an incident seamlessly, effectively and efficiently, it is imperative that a unified management structure is employed. The process of organising for effective incident management used in Australia is based on the United States system of National Incident Management Systems (Department of Homeland Security 2008). This management based system for fire and emergency management is known as The Australasian Inter-service Incident Management System (AIIMS), and is described in the next section.

4.4 The integration of incident management teams (IMTs) with The Australasian Inter-service Incident Management System (AIIMS)

AIIMS was developed from the National Inter-agency Incident Management System which was formally adopted as a national system in 2003 (AFAC 2005). Although AIIMS is primarily used by fire and land management agencies, it is also recognised that there are many other organisations including non-emergency services that have roles in managing the incident. According to the manual, AIIMS ‘facilitates the coordination of all activities, by all parties involved, in the resolution of any emergency’ (AFAC 2005, p. 1). AIIMS makes provision for the necessary framework for establishing protocols to liaise and coordinate across multiple agencies in all stages (i.e., pre-planning, preparedness, response and recovery) across state and national levels as illustrated in Figure 4.2.

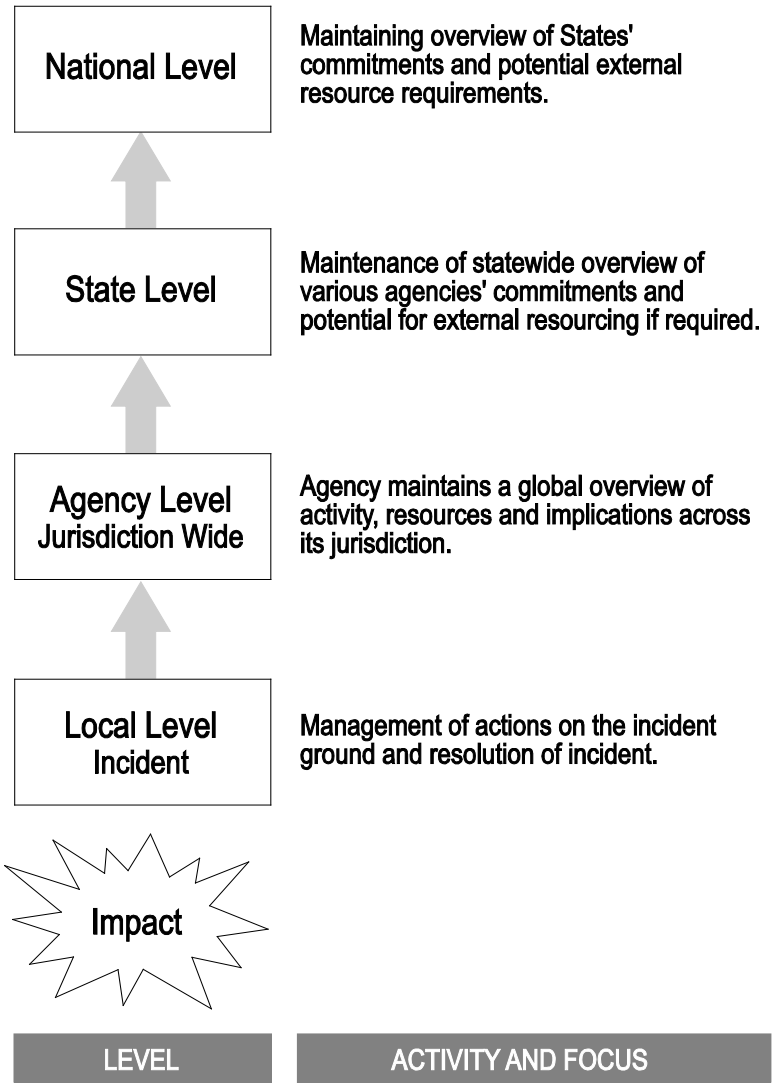


Figure 4.2 Four levels of impact (Source: AFAC 2005, p. ii)

AIIMS provides an incident management framework for emergency service organisations which is based on three key principles (i.e., functional management, management by objectives and span of control) (AFAC 2005). The framework is relevant to any size incident starting with first response and expanding accordingly as the incident grows in size and complexity.

The functional management (or core organising unit) within the incident management framework is the incident management team. Incident management teams can be comprised of two or more people to carry out the below four functions[2]. The roles and responsibilities of key personnel (i.e., the Incident Controller, the Planning Officer, the Operations Officer and the Logistics Officer) will be discussed in Section 4.7.1. The four functions include:

- *Control*: The management of all activities necessary for the resolution of the incident
- *Planning:* The collection, analysis and dissemination of information and the development of plan for the resolution of the incident
- *Operations:* The tasking and application of resources to resolution of an incident
- *Logistics:* The acquisition and provision of human and physical resources, facilities, services and materials to support achievement of incident objectives
  (AFAC 2005, p. 4).

Management by objectives is a consultative process whereby the Incident Controller (who has the overall responsibility of managing the incident) confers with other incident management team members to establish the required outcomes. These outcomes are then conveyed to all other personnel and agencies involved (AFAC 2005).

[2] NB: Data and analysis was conducted prior to the introduction of the Information Unit (2011).

The environment in which incident management is carried out is ever changing and, if not managed effectively, can become dangerous. Therefore, a span of control is required. A span of control is:

> a concept that relates to the number of groups or individuals that can be successfully supervised by one person...up to five reporting groups or individual is considered to be desirable, as this maintains a supervisor's ability to effectively task, monitor and evaluate performance (AFAC 2005, p. 5).

As an incident becomes more complex, more people are required. The advantage of such a framework, it is argued, is that it is flexible to be able to expand as the emergency escalates and can reduce as the emergency scales down. According to the manual, this framework also assists in seamless integration when multiple agencies are involved. Within incident management there are three different levels of classification for incidents which will be discussed in the next section.

4.5 Classification of an incident

An incident that is able to be managed through a local or initial response is classified as level 1. In this case, the functional sections (i.e., control, operations, planning and logistics) can be carried out by one person on-scene, the Incident Controller (AFAC 2005). Figure 4.3 shows incident management in its simplest form.

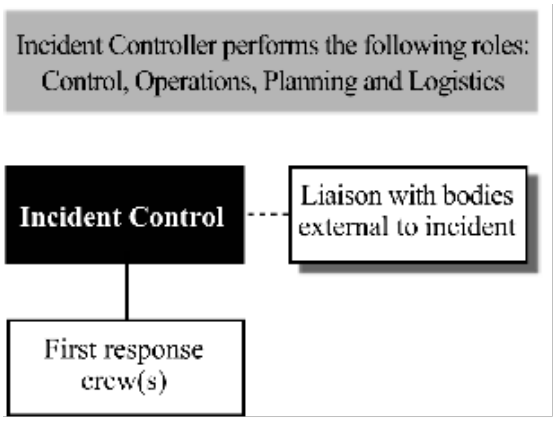


Figure 4.3 Example of possible Level 1 incident: First response crew, local response arrangements (Source: AFAC 2005, p. 16)

Incidents that are more complex, requiring the establishment of functional sections, for example, would be classified as level 2. An incident that is large and/or complex and has high risk would be classified as level 3. Figure 4.4 shows the incident management structure for level 3. It is important to note that the fires discussed by participants in this study were all classified as level 3.

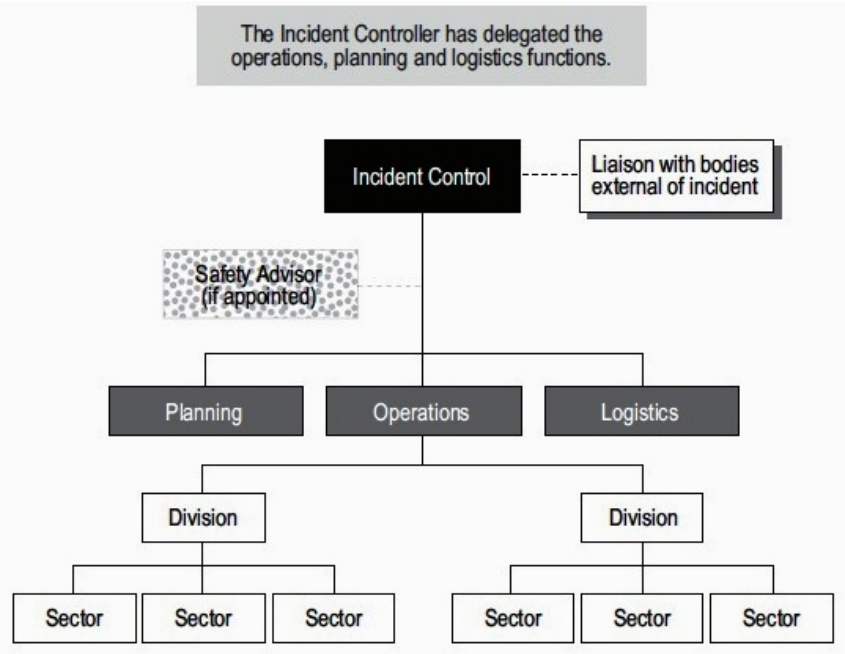


Figure 4.4 Example of possible Level 3 incident: Incident Management Team of 4; Sectors and Divisions established (Source: AFAC 2005, p. 20)

4.6 The formation of an incident management team

To establish an incident management team, the control authority (i.e., the agency which has the responsibility for the overall direction of emergency management activities) will appoint the Incident Controller. While the control authority has the responsibility for the overall direction of emergency management activities, the Incident Controller is deemed to have the authority required to manage the incident. All decisions about the management of the incident (including resources) must be in consultation with, and authorised by, the Incident Controller (AFAC 2005).

Included in the Incident Controller's responsibilities is establishing the incident management framework; that is, the functions of control, planning, operations and logistics. When all functions have individuals

appointed to them, an incident management team is formed. For example, in the case of a level 2 incident, the Incident Controller might decide to delegate an operations officer, planning officer and logistics officer to fulfil the functions. When there is a large complex incident where each of the sections is operating, the Planning Officer, the Operations Officer and the Logistics Officer might require support. In this case, the incident control structure would resemble Figure 4.5. The colour-coded figure represents the tabards worn by incident management team personnel in the various functions.

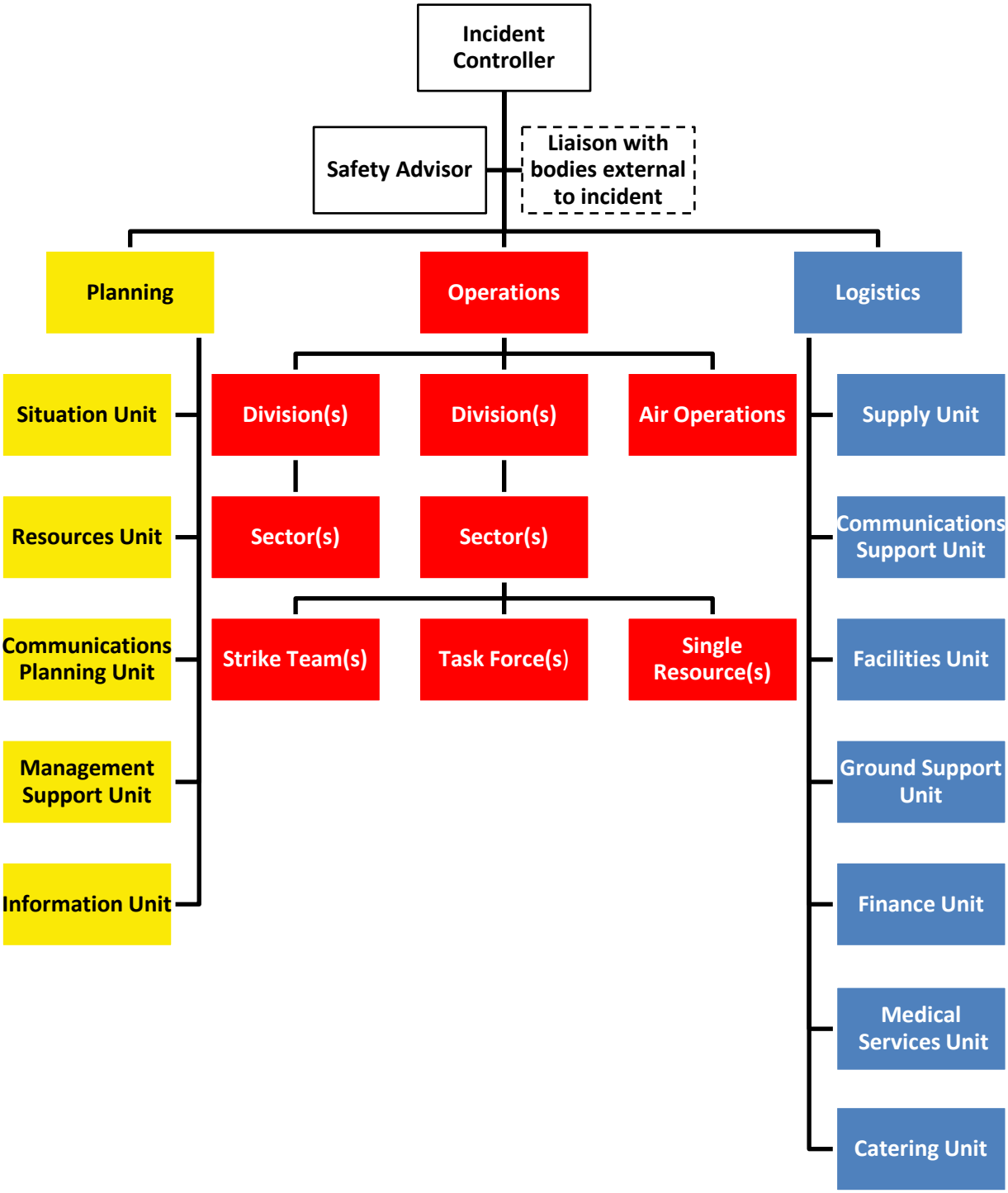


Figure 4.5 AIIMS structure [source: adapted from AFAC 2005, p. 13]

Similar to other high-consequence environments, fire and emergency management endorse a safety culture where a safety advisor is appointed (Figure 4.5) and where all members of the team direct their attention and actions towards minimising risk. Fire and emergency management work relies on incident management teams to assist incident controllers to ensure that the control of the incident:

- is properly planned
- is adequately resourced within the constraints of the agencies
- is suitably implemented
- provides for the safety and welfare of people involved in controlling the incident
- minimises impacts on community and the environment
- is effective and efficient (AFAC 2005, pp. 12, 13).

4.7 Roles and responsibilities of key personnel within incident management

This section outlines some of the roles and responsibilities of key incident management personnel, as per the AIIMS (2005) manual. Included in the discussion are the roles and responsibilities of the Incident Controller, the Planning Officer, the Operations Officer and the Logistics Officer. The roles and responsibilities of the Sector Commander, the Division Commander and strike team, task force and crew leaders will also be discussed. These key personnel are situated on the fireground and, under the AIIMS framework, the commanders report to the Operations Officer via the chain of command (see Figure 4.5).

4.7.1 Roles and responsibilities of key personnel within the incident management team

4.7.1.1 Incident Controller

As previously mentioned, the Incident Controller is responsible for managing all activities related to the incident at hand. Some of the responsibilities include monitoring and reviewing the safety and welfare of all personnel, assessing the situation, identifying risks, prioritising tasks and approving plans and strategies to control the incident. The Incident Controller also facilitates media management and communicates progress to all stakeholders and affected communities.

It is through establishing and maintaining a management structure that incident controllers play a pivotal role in integrating tasks and teamwork within and between incident management teams.

4.7.1.2 Planning Officer

When all units (see Figure 4.5) are operating within the Planning Section, the Planning Officer manages and coordinates these units to ensure effective planning. This includes liaising closely with the Incident Controller, the Operations Officer and the Logistics Officer. He/she is also responsible for gathering current and projected information on the situation, disseminating that information, planning alternative strategies and assessing economic, health and environmental risks.

4.7.1.3 Operations Officer

The Operations Officer manages all personnel within the Operations Section in the incident management team. The Operations Officer's role is also to establish (and manage) an operational structure, allocate resources (i.e., strike teams and task forces) for the fireground, and assemble and disassemble resources at the fireground as required. The Operations Officer liaises closely with the Incident Controller, the Planning Officer and the Division Commander and also assists in developing and implementing the Incident Action Plan (IAP) at the incident. An incident action plan is a document that outlines operational objectives, strategies for achieving those objectives and identifies key risk exposures (see Appendix 5 for an example).

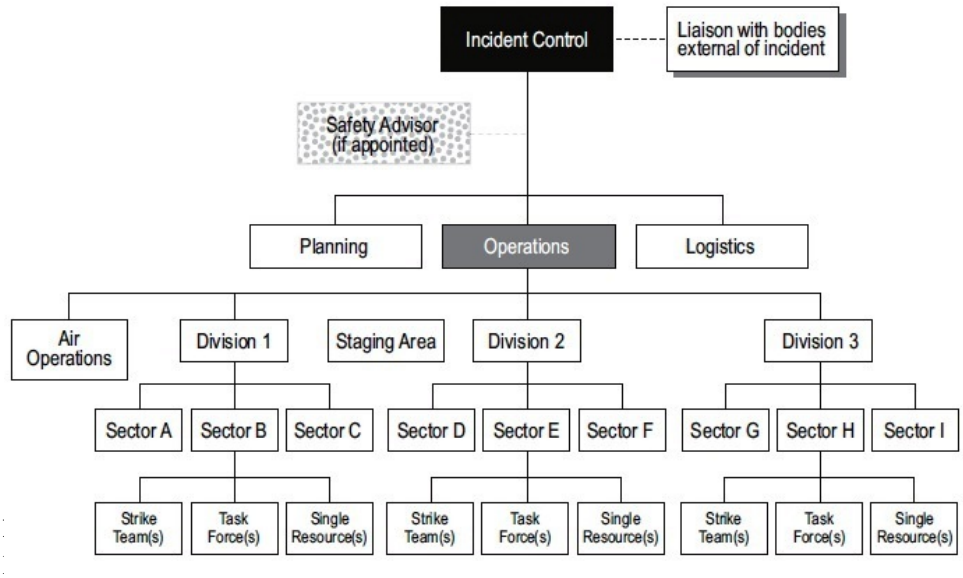
4.7.1.4 Logistics Officer

The Logistics Officer liaises closely with the Incident Controller and the Planning Officer, and with the Operations Officer in terms of the staging areas (if required). He/she also has a role in developing the logistics component of the Incident Action Plan. In addition to this, the Logistics Officer also allocates tasks to logistics personnel and purchases and maintains human and physical resources, facilities and services required.

Figure 4.6 Briefing with functional leaders
(clockwise the Planning Officer [yellow tabard]; the Logistics Officer [blue tabard]; the Operations Officer [red tabard]; the Incident Controller; the Deputy Incident Controller) (Source: QFRS)

4.7.2 Roles and responsibilities of key personnel within incident management on the fireground

As mentioned previously, the Sector Commander, Division Commander, Strike Team, Task Force and Crew Leaders are situated on the fireground; however, in the chain of command they come under the Operations Section in the incident management team (see Figure 4.7).



4.7.2.1 Division Commander

The Division Commander maintains an ongoing information exchange with the Operations Officer and implements the Division Commander's portion of the Incident Action Plan. He/she also has the responsibility of supervising all resources allocated to them and monitors all activities within their area.

4.7.2.2 Sector Commander

The Sector Commander has the responsibility of maintaining ongoing information exchange with the Division Commander. If a division commander is not appointed then the Sector Commander will liaise directly with the Operations Officer. His/her role is to monitor all activities within their area of responsibility, implement the Sector Commander's portion of the Incident Action Plan and supervise all resources allocated to them.

4.7.2.3 Strike Team, Task Force and Crew Leaders

The Strike Team, Task Force and Crew Leaders' role is to maintain ongoing information exchange with the Sector Commander. They are also responsible for ensuring the safety and welfare of crews, briefing and debriefing crews and maintaining a record of activities.

Figure 4.8 Divisional Command Point (Source: QFRS)

4.8 Equipping personnel to manage incidents

With significant climate changes, and fires such as Black Saturday 2009 (introduced earlier in this thesis), fire and emergency management personnel are continually under intense pressure. Community expectations have amplified in recent times, requiring a high quality of service and high accountability. Along with legal and moral expectations, governing bodies have placed enormous demands on emergency services beyond the

traditional roles of firefighters (Ford 2002). To equip firefighters with the knowledge, skills and roles they need to undertake, the Australian Fire Authorities Council (AFAC) has been actively involved in developing fire qualifications in the Public Safety Training Package. The next section will discuss further the ways in which fire and emergency personnel become equipped in managing incidents.

4.9 Training in firefighting and incident management

Within Australia, fire and emergency services, and other registered training organisations, offer a range of nationally accredited training. Under nationally accredited training, there are five levels of vocationally based qualifications (i.e., Certificates II and III and IV, Diploma and Advanced Diploma). All training is carried out by qualified training officers.

All career firefighters receive nationally accredited training from the Public Safety Training Package and undergo regular reviews. All firefighters who are involved in structural firefighting operations are to complete core units contained within Certificates II and III in Firefighting and Emergency Operations. All firefighters who are involved in land management and bushfire firefighting are to complete core units contained within Certificates II and III in Firefighting Operations. For those firefighters who are in a leadership role, there is a Certificate IV that covers leadership and supervisory functions. Diploma and Advanced Diploma qualifications address management functions. Figure 4.9 illustrates the pathway to Command, Control and Coordination from Certificate II to Advanced Diploma.

In addition to certificate level training in firefighting, a number of universities offer undergraduate and graduate courses in fire ecology and land management. For further details on training in firefighting and emergency management, see http://knowledgeweb.afac.com.au/training/public_safety_training_package

Volunteer firefighters undertake basic firefighting training, with most states offering nationally accredited training. Some fire agencies, however, offer volunteers' training that is recognised only within the organisation (i.e., non-accredited training).

The Australasian Fire and Emergency Service Authority Council (AFAC) also offers a number of seminars, forums, workshops and specialist courses about firefighter's health and safety, safe decision making and enhancing incident management teamwork.

4.9.1 Training for incident management personnel

Incident management teams work under intense pressure in situations that demand high levels of accountability for their decisions. They perform complex tasks, in rapidly changing environments, where strong teamwork is essential. It is important, therefore, to ensure that incident management team training is undertaken, so that personnel (regardless of whether they are novice or experienced) are equipped to meet the ever-changing demands and be effective teams. All personnel, with the exception of a logistics officer, are required to have a firefighting background and have the appropriate qualifications. For example, incident controllers must have group leader / sector or division commander certification, and complete

the unit ‘Command Agency Personnel within a Multi-Agency Emergency Response’ (See Figure 4.9).

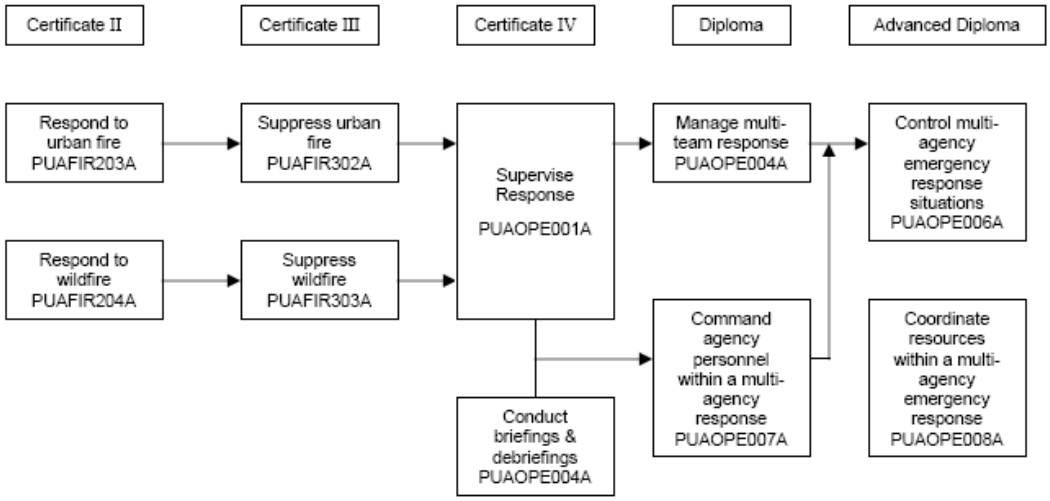


Figure 4.9 Prerequisites to command, control and coordination competencies
(Source: Public Safety Training Package version 3, p. 55)

All personnel who work in an incident management team, including those who have a subordinate role (e.g., Situation Officer, Communications Officer), are required to undertake a short AIIMS course: Introduction to Incident Control System (ICS) for Incident Management Teams (IMT). Upon the successful completion of this theoretical component, all incident management personnel undertake regular simulated incident management team training. To resemble real-time activity, this type of training includes typical problems and stressful events that might arise during operational situations.

4.10 Chapter summary

This chapter has served to introduce the challenges facing those involved in fire and emergency management. Fire and emergency management has

a significant role to play in the Australian context given that Australia is one of the most bushfire prone areas in the world. Moreover, climate change is anticipated to continue to increase the frequency, velocity and size of bushfires in Australia.

To eliminate or reduce the impact of bushfires, and increase the resilience of the community, Australia has embraced a specific approach (i.e., Prevention, Preparedness, Response and Recovery) to bushfire management. Such arrangements provide:

- education and information to the community to effectively deal with bushfires, and activate preparedness arrangements and plans to respond to bushfires
- assistance to the community in rebuilding infrastructure
- help to repair emotional, social, economic and physical wellbeing.

In terms of responsibilities, bushfire management is governed by land tenure (i.e., public land and private land). Fires that occur on public land are controlled by land management agencies and fires that occur on private land are controlled by fire agencies. Within fire agencies, two types of employment contract with firefighters exist. There are career firefighters, who respond to fires in urban areas, and volunteer firefighters who respond to rural areas. What this thesis will show, in coming chapters, is that such organisational structures (and cultures) play a key role in influencing people's affective experiences and work activities.

As each state and territory has their own control and coordination arrangements to assist in managing bushfires (and other incidents)

seamlessly, a unified management structure (i.e., AIIMS) is adopted. Central to this structure are incident management teams. What are the lived experiences of people who work in incident management teams? That will be the focus of the next chapter.

5

CHAPTER FIVE

THE LIVED EXPERIENCES OF PERSONNEL WHO WORK IN INCIDENT MANAGEMENT TEAMS

5.1 Introduction

The previous chapter outlined the context and organisational structure in which incident management work is carried out. This chapter discusses incident management work through the lived experiences of personnel who work in incident management teams.

The environment in which the emergency management personnel work is dynamic and ever-changing and the tasks to meet those demands are cognitively and physically challenging. Included in this chapter are the ways in which personnel deal with managing an environment that is ever changing. This chapter also illustrates how participants' affective states are embedded in their work activity. It will also be shown the way in which those affective experiences are influenced by the work they do. This chapter, therefore, addresses the research question:

- What are the lived experiences of people who work in incident management teams?

5.2 Preparing for the unknown

Each time incident management teams respond to an incident, there is always an element of uncertainty of what they might be dealing with. The following quote provides an example of what it is like to face the unknown, and the way in which personnel prepare for such situations. At the time of data collection, this participant had been an incident controller for four years. He went from having the position of the Operations Officer to the Incident Controller within a few weeks. Here, he is describing what he likes most about his work:

> The variety. It's really funny, I sort of go into a zone when I get a call, '*yep you're off.*' Like [at] (name of place); I really felt important there [because] they actually flew a light plane up and picked me up in (name of place) and flew me down close to the (name of place) and then I got picked up in a car and taken there, and I thought '*I must be bloody important*'...Initially you go *'oh shit'* and your stomach starts to churn a little bit and you go, '*What am I getting into? What am I facing?*' and then I go into a zone and go, '*okay, I've done this before [and] I've done the training. I've done it on the ground, I've done it all'*. I go into a zone and I actually arrive quite relaxed [DSE_01].

In telling his story, the Incident Controller identifies himself as being '*important*' because he was being chauffeured to where the fire occurred. On the way, going to the incident, an overwhelming feeling came upon him and he began to question, *'what am I getting into? What am I facing?'* Although he felt important and was eager to be involved in the event, what he was about to experience was unpredictable – how would the event unveil? It is contended that the feeling that led him to question his involvement was the 'fear of the unknown'. Although this feeling was intense, it was short lived.

In his narrative, it became evident that a sense of calmness and composure arose in the Incident Controller, allowing his fear and tenseness to subside. He went *'into a zone'*. It could be argued that what the Incident Controller was experiencing was a sense of 'flow'. According to Csikszentmihalyi (1992), when a person is experiencing a state of 'flow', they have a heightened sense of self, and feel in effortless control. It is also contended that he displays a sense of his own mastery (Bandura 1977; 2000) when he says, '*I've done this before'* and *'I actually arrive quite relaxed'*. According to Klein (2004) decision making is a natural extension of experience. Clearly the Incident Controller has been successful in previous operations and this, it could be argued, has raised his efficacy beliefs. Now he has the expectation that he will be able to deal proficiently with the incident at hand. Similarly, Williams et al. (2010) study showed that self-efficacy may provide a coping mechanism to deal with the effects of a demanding environment. It could also be argued that the way in which he constructs his self-efficacy beliefs is not solely through mastery experiences. He has connected his past experiences with his training and what he is focused on now. This supports the work of Tams (2008), who found that when people are successful they develop confidence by focusing on the task and generalising from previous experiences.

5.3 Gaining control of the unknown

The following quote is from a conversation with an incident controller who is talking about managing a structural fire. When he arrived on scene, the scene was, in his words, '*chaotic*'. The building contained a lot of flammable substances, it was a weekend and late at night. The fire had

been going for some time. The initial resources were positioned in such a way that it was difficult to make an assessment, so he had to reorganise the firefighters and fire trucks. All of this contributed to the incident being difficult to manage from the beginning.

> ... there were people [firefighters] up the lane way and there were people [firefighters] across the front, so to try and get an appraisal of how it was all going and whether we were achieving any sort of success was difficult in the first instance [because of] where they had positioned all the appliances [i.e., fire trucks] and the fire fighters at the front. It [the building] had a particular modern sort of second level and mezzanine that stepped out over like a car park area. So obviously it had a big counterweight overhang and where we were situated. I got the fright of my life! We'd established there were people working in the collapse zone and to actually get our / there wasn't much science to my initial attack, it was probably / or initial actions; it was probably more panic, not … I mean it's not panic in the terms of I didn't know what I was doing; I panicked in that '*jeez, we've got to shift all the men and equipment out of that*'.

> You have to start to rebuild the job again and it looks awful because you've got to turn water off and lines are connected to the lines and you've got to make sure that if you've got a line established and there are firefighters on the end, you can't take the water off them because that might be the only thing that got protecting them from the radiant heat... the whole thing [the second floor] did fall down and very, very spectacularly, you know, from the top to the bottom came down and it was just like you [had] disembowelled somebody because you could see straight into the / it was great because we could fight the water straight in from the front... I didn't have many resources...I felt like I was probably starting from this base but knowing at the end of the day I'm going to be up [on] the top, so I started to rebuild what I want in place so actually when (name of colleague) did arrive it looked quite sharp, you know, we had it [the building] all set up and taped off and then when the wall came down.. It looked good [MFB_8].

This was an example of an incident that could have gone wrong. Appliances and firefighters were placed in less than strategic positions, indeed in harm's way, when the Incident Controller arrived. With the dynamic nature of the work, personnel, more often than not, need to deal with unforseen emergent issues. In this instance, it was difficult for the Incident Controller to make an assessment of the situation. Once the Incident Controller learned there were people working in a hazardous area (i.e., the building was on fire and people were in the potential collapse zone), he sensed fear. As he said, *'I got the fright of my life'*. This provides evidence that the fear he felt was intense and very real. Initially, his reaction was to panic, whereby the fear becomes uncontrollable, yet this did not happen. There is evidence the Incident Controller was able to prioritise tasks because he did not panic in terms of not knowing what to do. According to Brown (1998), people who have a sense of control over their situation gain a higher sense of self and are able to cope better with harsh conditions. It could be argued, therefore, that the Incident Controller felt empowered to take the correct action. He moved beyond his initial feeling of panic for the firefighters' safety. Similar to the findings in Bolger (1990) and Taynor, Klein and Thordsen (1990), the Incident Controller was practical in his problem-solving and actions, thus protecting the safety of others. He managed to move the resources, take a different approach and gain control without any fatalities.

As the participant said, he had *'to start to rebuild the job again'*. This meant turning off the water. He mentions *'lines are connected to lines'*. These lines are the hoses that water is pumped through. Turning the water off can potentially place firefighters at risk. Although the Incident

Controller had limited resources, he did not allow this to impact on managing the incident. There is evidence he was probably feeling confident and in control when he said, *'I felt like I was probably starting from this base but knowing at the end of the day I'm going to be up [on] the top'*. It can be argued that the Incident Controller gained this sense of confidence from his previous experiences. He knew that, with effort, he was going to master the situation. Self-efficacy beliefs which are gained through repeatedly received successes are, according to Bandura (1989), the most powerful source of efficacy information. It is evident in the Incident Controller's story that he persevered and the effort paid off.

The Incident Controller described the second floor of the building falling down as if *'you disembowelled somebody'*. Disembowelment, in ancient times, was performed on the living as a severe form of capital punishment. He used this description because he could see straight into the building. It was as if the Incident Controller relished in witnessing the disembowelment of the one (i.e., the fire). In his words he found it, '*very very spectacular...and it was good'*. It can be argued then, that what he was feeling was more than joy and pleasure. Through his mastery experience, he was 'on top'. He felt empowered.

Figure 5.1 Potential hazards of a structural fire (Source: TFS)

5.3.1 The gendering of fire

As mentioned in Chapter 4, the Operations Officer and his unit oversee and coordinate the ground crew. His role is the tasking and application of resources to resolve the incident. Here, this operations officer is talking about an incident that started with a lightning strike. Based on weather reports, he knew that there were going to be what he called some *'tough days'*. A tough day is when incident management personnel are faced with one obstacle after another, typically influenced by bad 'fire weather' which was the case in this instance. In this case, the weather was unfavourable because of the gusty winds, the increasing temperature and, most likely, low humidity levels. With this in mind, firefighters were

conducting a back burn[3] to contain the fire by stopping it from approaching and crossing the road. In this instance, the Operations Officer believes the incident was managed well.

> ... we really wanted to stop the fire coming from the north and crossing a road because having been there in the past when it gets across that side of the road, the southern side, you're in for the long haul because there's no place to pull it [the fire] up and it goes fairly strong, it's a cow of a place to try to deal with it. So that was the priority to stop it [the fire] there and [to] also protect (name of place) itself. So we were dealing with the whole of the fire, but I think it must have been the Sunday forecast was really, really atrocious – mid 30s with extremely strong winds coming out of the north, low humidity... the north-eastern perimeter of the fire with a lot of back burning, and late in the afternoon [the] wind was supposed to turn and I think it got out to about 37°C blowing a gale, and she [the fire] was doing runs everywhere, quite impressive. Then the wind shifted... I went up in the air [in a helicopter] and had a look and she [the fire] ripped down... there's a big belt of vegetation, mixed eucalypt, tea-tree and that kind of stuff. When she [the fire] hit it just exploded and so we didn't have many people there so I got the other helicopter up to start hitting it with the buckets... it was all hands on deck for a while. She [the fire] jumped the road and then went totally to a spot we ignored, because concentrating with the weather conditions and everything. Anyway, we really scrambled and we pulled it off. It could have gone either way but it was something that I felt, I felt really good that we were able to respond to that situation [Parks_02].

The Operations Officer's story above revealed the fire was difficult to contain because the location that was engulfed by fire was *'a cow of a place'*. The terrain in which the fire was located is steep and dense, which

[3] Back burning is a way of reducing the amount of fuel during a bushfire by lighting small fires in front of a main fire so that the small fires burn backward towards the main fire, therefore there will be minimal fuel that can burn when the main fire arrives.

makes it difficult to access. Although the Operations Officer was aware of the location and anticipated what might prevail, the changing wind direction added more complexity to the situation.

It is interesting to note the language the Operations Officer used when describing the fire. The fire in this instance (and many others) is, in fact, gendered as *'she'*. Gendering in fighting bushfires has been long standing in Australia with firefighting being perceived as a masculine activity. This is due, in part, to the way in which society perceives innate differences (e.g., risk taking behaviours) between men and women and the traditional gender roles in the division of labour (Tyler, Fairbrother, Chaplin, Mees Philips & Toh 2010). The language used, and the narrative in the above quote, however, reveals something about the relationship between the firefighter and the fire. He was very impressed by the way 'she' moved *'doing runs everywhere'*. This, it can be argued, is somewhat akin to a tantalising woman which had gained his constant attention with a seemingly infinite capacity to consume his energies. Even though the Operations Officer is engaged in 'her' activity, he never understood everything there was to know about her. 'She' '*went totally to a spot we ignored'*. It can be argued 'she' is dangerous and will turn on her rival at any moment.

The Operations Officer was not alone in this battle. *'It was all hands on deck for a while'*. According to Brown (1998), individuals do not work in isolation, as has already been argued, incident management work outcomes are, more often than not, achieved through interdependent efforts. Although there were tough days in managing this incident, there is evidence that there were shared feelings of being energised, which assisted

in gaining control. As the participant said, '*we really scrambled and we pulled it off*'.

It is argued, in this instance, that the emotional energy was contagious within the group (Barsade 2002) and that high emotional energy assisted with the constructive results (Mann, Varey & Button 2000; Isen & Reeve 2005). The incident was over and he '*felt really good that we were able to respond to that situation'*. He felt good about his work and, with it, about himself and others. It could be contended that he knew that others appreciated his expertise and was aware of his ability. He had gained the identity of a competent operations officer. As Brown (1998) contends, social relationships are an important component in the sense of self because it is through culture and interaction with others that one's self perception is constructed (Forgas & Williams 2002). In mastering the challenges that incident management personnel face, personnel also experience satisfaction and a sense of achievement. This will be discussed in the following section.

Figure 5.2 Steep and dense terrain (Source: TFS)

5.4 Sense of achievement

The next quote is from an interview with a planning officer whose function is to collect, analyse and disseminate information that will provide a plan to manage the incident. He talked about an experience that brought forth a sense of mastery and a feeling of joy in the work he does. The quote illustrates a sense of achievement which is embedded in the satisfaction he felt in making progress. In sharing his experience, the Planning Officer describes a situation that was chaotic and almost out of control, still it was able to be moulded into shape.

> ... I guess the feeling that you've actually made some progress. That's pretty satisfying... it [the incident] was quite difficult and there was a period in the middle where we actually went from complete chaos /we had a Deputy Incident Controller who kind of started pulling it into shape and we actually got another Incident Controller who was very good. In about 3 days the whole incident

> changed from being really a problem, and kind of difficult and out of control, to being in control, which we didn't think we'd do... I think we were the only people who were able to hold anything that day. We had three fires and we kept them all under control and they [firefighters] got out, like they escaped and we dealt with it really efficiently. So everyone was feeling really good about that, you know the achievement. And that Incident Controller actually when he left, he actually cried. That's just how strong the feelings get... you do feel because you know you've actually done a good job [NSWRFS_04].

The above personal account of the Planning Officer's experience shows he has respect for the Deputy Incident Controller who *'started pulling it [the incident] into shape'* and the Incident Controller was '*very good'* because in *'about 3 days, the whole incident changed from being really a problem, and kind of difficult and out of control, to being in control'*. Team members, along with their leaders, had got on top the fire. It can be argued that the Planning Officer had a heightened sense of efficacy through the vicarious experience (Bandura 1989) of observing the controllers whom he considered performed really well, and this heightened sense of efficacy assisted him in pursuing and achieving his goals.

In the above narrative, the Planning Officer also perceived, '*we were the only people who were able to hold anything that day'*. It is suggested that in this instance, the Planning Officer perceived a mastery experience related to the team in comparing to other team performances. The team performed well and this provided him with a good feeling. As Brown (1998) contends, people feel better about themselves when they feel they belong to a group that is somehow comparatively better than others. It can also be argued that positive emotions and heightened efficacy beliefs provided the team with the resilience they required to deal with a difficult

situation (Bandura 2000). The sense of belonging, and the joy that the Planning Officer experienced, motivated him to perceive that he dealt with the incident '*really efficiently*'.

Similarly, Isen and Reeve (2005) found, in their study, that positive affect provides intrinsic motivation to stay on task. Incidents can continue for days and months. It is important, therefore, for team members to be able to continue to pursue their goals and manage the fire. There is also evidence in this Planning Officer's experience that there is a linkage between his positive mood, enhanced efficacy beliefs and performance. This is congruent with Tsai et al. (2007) study which found that participants in more positive moods may perform better through higher self-efficacy and task persistence.

There is evidence in the Planning Officer's story that managing incidents is emotionally charged when he revealed that after such an intense day it was not surprising that the Incident Controller was overwhelmed with emotion such that he showed this through crying. In the participant's own words, *'that's just how strong the feelings get'*. As discussed in Chapter 4, it is the role of an incident management team to manage the incident as seamlessly as possible and the Incident Controller is responsible for managing all activities related to the incident at hand.

5.5 Managing pressure

As mentioned previously, in Chapter 1, incident management teamwork is high-reliability work because incident management teams operate in hazardous conditions; the consequence of error is severe which places

personnel under a great deal of pressure. Signs of physical, mental and emotional exhaustion were interwoven throughout the participants' stories. It is argued that these elements can lead personnel to feel vulnerable and exposed, psychologically and socially. In a related domain, Brown and Brooks' (2002) work found that the emotional climate of night nursing included feelings of fear and vulnerability due to the amount of responsibility. A number of participants described the way they feel as *'being in a pressure cooker'* while others said they feel *'drained'*. When people feel such pressure about their work it can come at a cost to one's wellbeing.

According to Kowalski-Trakofler and Vaught (2003), the degree to which people experience stress depends, in part, on their individual perception. With repeated exposure to high risk situations, it is highly likely, that incident management personnel may lose their sense of danger and become blasé in their decision making.[4] It is clear that working in such dynamic and high-consequence environments can, at times, lead individuals to feeling stressed and vulnerable. This is illustrated in the following quote from an incident controller who had been working in fire and emergency management for more than 25 years.

> I don't enjoy the challenge because, well, look it's quite stressful at times... It never used to stress me with fires. I used to love going to them. I used to enjoy fighting them. Now, to be honest, if I had a choice I'd say, '*look, fires are difficult. They are certainly now very bureaucratic because you will make those decisions on the run'*. There are lots of aspects to it now and, as a manager, it really exposes you to a lot of things. If something slips up then you bear the brunt of the whole lot. So at times you feel exposed.

[4] I am grateful to examiner 2 for this insight

> If something does go wrong / and I guess this was reinforced where this guy was fatally injured at the fire I was at. You think *'you're doing a good job and everyone is putting the fire out'* and suddenly someone dies. You think *'how vulnerable are / the chook is home to roost'* in your own mind to suggest, *'well, gee whiz, we just roll along thinking it's all hunky dory*' and then something innocuous can be such a serious incident. I mean that's in my mind all the time and I think of fire seasons now as an issue to deal with, rather than something that's just a part of my work, and yeah I'd like to push it aside. Some people seem to be able to. You go to incidents and people are jolly and jovial and pretty happy and you're down in your office thinking *'gee whiz, if we don't stop this thing before this particular road here it's going to do this and that'* [DSE_02].

The above extract from the Incident Controller illustrates how demanding and stressful incident management work can be. It shows how, after working in fire and emergency management for many years, the enjoyment of the challenge and the love of engaging with the fire have disappeared. In his story, there is evidence of how vulnerable he feels. As an incident controller he is held responsible and accountable for any errors that might transpire. As he said, '*if something slips up, then you bear the brunt of the whole lot'*. Unfortunately for this incident controller, he has experienced first-hand what that is like because at one of the incidents that he attended he reported that a fatality did occur.

It is contended that, initially, the Incident Controller was confident and had a sense of certainty in accomplishing what he perceived to be an '*innocuous'* mission. However, this was not the case and a life was lost. He paid dearly for the error that occurred. In his words, '*the chook is home to roost'*. He had a heightened sense of vulnerability because of his human

error. He was open to personal attack from his peers, family and friends who had been tragically affected by their loved one's loss of life.

In the participant's story, there is also evidence of a turning point in the way in which he mentally structures his work and his affective experiences. There was a time when he embraced fire seasons (which are inevitable) but now he preconceives them '*as an issue to deal with'*. The enjoyment the Incident Controller once experienced with managing the fire is now gone. It could be argued that such negative feelings could potentially lead to burnout and depression. When people sense discrepancies between their expectations and ideas, and the harsh realities of everyday work life, they feel stressed and emotionally strained (Macky & Boxall 2008). Inevitably, individuals start to change their attitudes towards the people they work with and/or their job, thus resulting in burnout (Schaufeli & Buunk 1996).

5.6 Managing the gaze

The external pressure from the media, bureaucratic channels and the community at large has increased, in recent times, with the community and governing bodies having higher expectations. Many incident controllers talked about how they tend to spend more time managing the media and ministers than managing the incident management team, and coordinating the fireground. The following quote is from a planning officer who indicated that social and political aspects have added higher demands and more complexity to managing incidents.

> If we were in a world where an incident management team only had to focus on the fire and where they were going to put people

> and the length of operational periods, you'd find our team would do it a bit easier because they only have to worry about the fire [QFRS_10].

The above quote indicates that managing incidents has gone beyond the traditional roles of firefighters as also indicated by Ford (2002). The quote also illustrates there are tensions within the broader roles of emergency management. Incident management personnel deal with media coverage and external stakeholders (e.g., road authorities, water boards, telecommunication authorities) when infrastructure is affected by the incident. Participants indicated that when there are a lot of people placing demands on the incident management team it can become very '*draining*' and '*wearing*' on the team. As one participant said, '*life can become difficult*' [QFRS 11] when incident controllers and other key personnel are pressed for time and they are unable to talk to external stakeholders. People from other agencies, for example, will gain information from elsewhere and start dealing with the media themselves. This is when the perception of the incident changes because people are not fully informed.

5.7 Managing vulnerability

The following narrative expands on the experience of the pressure from the media. This participant is recalling a time when he was listening to radio talk back on his way home from an incident. A listener phoned in and started talking about dozers that had been left sitting at the end of the road where he lives. The decision to leave the dozers at that location was made by this participant, as he was the Incident Controller, as a part precautionary strategy. This narrative provides insights into the

participant's sense of self and the relationship of his sense of self to the job.

At this particular incident, it was necessary to carry out a major back burn to keep the fire under control. There were 25 dozers working on making a line around the fire. The Incident Controller decided to remove three of the dozers from there and put them on floats[5] just in case the back burn spread into a pine plantation. The pine plantation is located at the back of two sizable towns. If the dozers were not ready and in position when required it could take four or five hours to get them from the job they were doing to another location. The dozers were to be held in their new location for a period of 24 hours during the critical time of the back burn. This is what the Incident Controller had to say about the conversation he listened to on the radio.

> The media attention in (year) really drained me, where I knew I'd done everything possible on my shift and I was driving home to home base [for] a couple of days off, and I heard the (name of radio station) on talk back and people were going…just making comments about stuff that we had done, and I've paused and I've gone, '*Shit, that was my decision, I made that decision that these people are talking about*' ... I'm getting wound up now because this one still affects me, it really does... The amount of enquiries and the politicians and the whole political game that's gone on with fire really shits me. They don't realise they're playing with people's lives and emotions...
>
> I'm driving home thinking *'yep, we got the back burn in and it looks like (names of places) have been saved. We hadn't lost any houses'*. [I turn on the radio] and this lady [radio announcer] is just asking for stories. This bloke rings in and says, *'this bloody mob don't know what they're doing...I suppose the operators are*

[5] A float is a transportation carrier.

> *sitting around twiddling their thumbs...'* So the announcer goes, *'Oh gee, that doesn't sound very good. Anyone else got any stories like this?'...* And as a result of that [radio talk back] / and every other time [after I leave an incident] / I'd get home and I would go through every decision I made, and I still do it, I go, *'Nup, wouldn't change anything, that's what I did and I'll stick to that'* and if I ever have to front one of these enquiries I'll stick with what I've done [DSE_06].

The above story is an emotional account of how an incident controller feels '*drained*' by the media. There is also evidence in his story that he feels angry and frustrated with some of the political aspects of enquiries and community members who criticise fire agencies about their strategies with negative comments such as *'...I suppose the [dozer]operators are sitting around twiddling their thumbs'*. This incident controller bears emotional wounds that remain with him. In his own words, *'this one still affects me, it really does...they don't realise they're playing with people's lives and emotions'*. It could be argued this incident controller was also experiencing a sense of vulnerability. Forgas and Williams (2002) contend most individuals 'have the strongest emotional reactions to information that touches on our sense of self' (p. 75).

As Markus and Nurius (1986) argued, there is evidence embedded in the Incident Controller's story that there are tensions within his sense of self. When he left the incident, he felt good about the work he had accomplished as indicated by him saying, '*we hadn't lost any houses'*. Feeling good about the work one does can, more often than not, lead to having a positive identity (Roth 2004). There is also evidence that he has the identity of a confident and competent incident controller because of the good work he sensed he had achieved. However, on this account, the

Incident Controller has taken the listener's comment personally. The listener inferred that the fire services are letting the community down by saying *'this bloody mob don't know what they're doing'*.

In his last words, the Incident Controller reveals he is justifying his decision because he '*wouldn't change anything'*, yet the emotions he has experienced (e.g., drained, stress, anger and frustration), and this situation, still negatively affect him. Emotions, such as frustration in the work environment, that lead to progressive loss of idealism and energy, can result in attitudinal exhaustion and disenchantment. When an individual is continuously experiencing this, it is highly likely to result in burnout (Maslach & Jackson 1981).

5.8 Managing adversity

As mentioned previously, in incident management work there is the possibility of having to deal with unforseen emergent issues. For example, the spread of the fire and the velocity of its behaviour are ever-changing and unpredictable. As such, managing incidents requires flexibility to able to meet the demands of the environment. The following quote is from an operations officer who is describing how he deals with fire behaviour and other aspects (e.g., managing operational resources) that might be required for managing an incident.

> I can see it's going to be long [and] you plan for it and I think being a number of steps in front of what the fire is doing makes a big difference and I always say to people you've got to try and manage an incident with the ace of spades up your sleeve and try and keep three or four steps in front of it [NSWRFS_02].

According to Bandura (1982; 1986), drawing on previous experiences (i.e., mastery experiences) is one of the most powerful sources of information to develop efficacy beliefs. The above quote illustrates that people in incident management teams not only draw on past experiences and connect to the present to build collective confidence, they also attempt to construct connections between past and present experiences as well as pre-empting and planning ahead. This finding supports the work of Tams (2008), who found that people constructed their mastery by drawing on past experiences and focusing on the task, thus building analogies between their present and past events.

A sense of resilience to adversity is indicated in the quote. This suggests that collective efficacy has contributed to this resilience as well as the team's motivation and commitment to task. This is congruent with social cognitive theory which advocates the higher the sense of collective efficacy the more likely groups overcome obstacles to achieve desired outcomes (Bandura 2000).

5.9 Managing engagement

Participants also talked about how they try to adhere to 12-hour shifts and, when they do, it does not mean they are able to 'switch off' and go to sleep. One participant said, *'it will take you another six hours to wind down to get to sleep'* [NSWSES_03]. It is of no surprise that incident management personnel find it difficult to unwind and relax after a shift with the cognitive and physical demanding nature of their work, but it is also evident, that their work can be stressful and emotionally exhausting. They work in very compressed timeframes, where they are required to

think about a number of things simultaneously, and make calculated decisions, particularly if people are at risk. Participants conveyed how they often feel *'overstretched'* and *'pushed to the limit'*. This can be problematic because higher work stress, longer working hours and less sleep can be associated with poorer memory and performance (Rutledge et al. 2009). When this happens, people can sense fatigue and exhaustion (Schaufeli & Buunk 1996).

5.10 Chapter summary

This chapter addressed the research question: *What are the lived experiences of people who work in incident management teams?* This chapter has discussed the dynamic and unpredictable nature of the environment in which incident management personnel work. Some of the elements that contributed to the demands of the environment included fire behaviour and unpredictable weather. There were also times when fires were burning in steep and dense terrain which made it difficult for firefighters to access.

It was also discussed in this chapter that working in incident management teams is cognitively, physically and emotionally demanding. This was largely due to responsibilities (e.g., firefighters and community safety), media pressure (and community expectations) and working in real-time where once activities are initiated, they cannot be stopped.

It was shown in this chapter that when personnel are engaged in incident management work they manage a range of lived experiences each with

their requisite emotions (managing pressure, managing the gaze and managing vulnerability) and experience joy and frustration.

The way in which personnel managed working in such complex and demanding environments was also examined. It was shown that having a high sense of self assisted in dealing with the complexities of the environment, and in gaining control of the situation. It was also discussed that the way in which people perceived their sense of self was socially constructed. Self-efficacy beliefs, for example, were gained through training, mastery and vicarious experiences.

6

CHAPTER SIX

CULTURAL ELEMENTS WITHIN INCIDENT MANAGEMENT

6.1 Introduction

The previous chapter discussed the individual lived experiences of people who work in fire and emergency services, in incident management teams. Included in the discussion of the previous chapter are the demands of incident management work and how people deal with managing such an environment. This chapter will analyse the ways in which individuals and collectives experience the sociocultural context. A key conceptual tool for analysing the nature of collective work in incident management is culture. This is because it provides a key to understanding learning (Owen & Williamson 1994) and experiences (Schneider, Ehrart & Macey 2013) in the workplace.

This chapter will highlight the way in which the sociocultural context influences affect by showing how emergency management subcultures are socially constructed and how they, in turn, mediate and are mediated by experiences. It is through beliefs, values norms and expectations that affect is constructed (Harre 1986). Hence, from a sociocultural perspective affect is a mediating tool between the individual and the social (Leontive 1981).

Thus, this chapter will draw out some of the cultural elements that can be described within incident management work groups by addressing the following two research questions:

- What cultures can be identified within incident management work groups?
- What affective experiences are influenced by organisational culture?

According to Louis (1986), culture can be viewed as a set of understandings that emerge implicitly through people interacting in social groups. Thus, the stories people tell about their work are shaped by group norms, beliefs and values (Ott 1996; Czarniawska 1997)**.** The artefacts, norms, beliefs and values that people identify with have a role in creating culture and therefore can differentiate people in one group from people in another. Artefacts are physical or psychological tools, signs or language that people use to identify the work they do in the workplace (Holland & Valsiner 1998).

It will be shown in Section 6.2.1.1 of this chapter how symbols are a collective representation of people's deeply felt beliefs about their organisation. Norms are informal and unstated collective expectations of how people should behave in a group or what reaction should be given to a particular group or setting. People hold beliefs about themselves, relationships with others and the work they undertake. Values are strategies that are considered to be worthwhile or desirable which create a framework for workplace behaviour (Payne 2000).

There are different ways of analysing organisational culture. Martin (2002) for example, highlights that cultural members have differing experiences,

responsibilities and values. Thus, organisational culture is not always harmonious (e.g., integration) as there are times when there are contradictions and tensions (e.g., differentiation) and times when there are inescapable contradictions because cultural members can have multiple and overlapping identities, for example (e.g., fragmentation). It will be illustrated in this chapter that the cultural differences that are experienced by a number of groups are emotionally charged, which also influences the way in which work is carried out. It is important to uncover the differences between groups because it provides a means of analysing the in-groups and out-groups in workplace culture. Thus, organisations are not as neatly uniform as proponents of corporate culture might suggest (e.g., Schein 1985). While a strong united (i.e., non-agency specific) culture may be perceived as being ideal, a number of organisational theorists (e.g., Martin 1992; Alvesson 2002) have argued this is not plausible because each cultural member (and group) within an organisation have differing interests, experiences and values. Many participants described the division of different fire and emergency services groups as *'us and them'*. When people identify in-groups and out-groups in culture, it provides insights into understanding what is happening within and between those groups (Keyton 2005).

This chapter will also examine cultural integration within incident management where the norms, values and beliefs are collectively held, spoken and implicitly understood by the majority of people in the organisation (Payne 2000). Such collectively held beliefs are, for example, expressed in shared histories of experiences, which will be discussed in Section 6.3.

Social identity is important here as it has an important role in the workplace. This is because not only is identity about membership to the group, it is also about the 'emotional significance attached to that membership' (Tajfel cited in Augoustinos, Walker & Donahue 2006, p. 204) which is constructed through values and beliefs (Augoustinos et al. 2006). Finally, the affective states that participants experienced are embedded in their stories about groups, and are discussed throughout this chapter.

6.2 Groups in fire and emergency management

This chapter examines the groups that can be differentiated within fire and emergency management and the cultural meaning ascribed to those groups. It is important to examine groups because work groups are the building blocks of organisations (see for example – Beyerlein, Johnson & Beyerlein 1997). In this thesis, a group is defined as:

> A collection of individuals (1) who have significantly interdependent relations with each other, (2) who perceive themselves as a group, reliably distinguishing members from non-members, (3) whose group identity is recognized by non-members, (4) who, as group members acting alone or in concert, have significantly interdependent relations with other groups, and (5) whose roles in the group, therefore, a function of expectations from themselves, from other group members and from non-members (Hartley 1996, p. 401).

In the participants' stories, there was an indication that when it comes to the differing groups and organisations '*people don't understand one another's roles*' and '*there is a lack of understanding the culture of other organisations'*. This has strengthened the distinction between the various groups within incident management. Thus, it is argued that the way in

which incident management work is organised shapes the identification of different in-groups and out-groups. The following section illustrates how sub-cultures can emerge when two or more organisations join to work together. Although participants talked about how each agency shares a common goal of managing the fire effectively and efficiently, it was also evident there are divisions that have deep historical roots within incident management and these can be ascribed to the organisation's structural goals and the organisation's cultures that have built up around that work.

6.2.1 Organisational and goal differences

As outlined in Chapter 4, the way in which fires are managed is established by histories of land tenure: 'your fuel, your fire'. As such, fire agencies predominantly manage fires that are burning on private property and land management agencies predominately manage fires that are burning on public land. There are also other distinctions between these two groups that move beyond cultural ownership of land tenure and are rooted in the agency orientation to the job of fire mitigation and its management. For example, rural fire agencies are volunteers with a diversity of experiences and have been trained in basic firefighting whereas land management agencies have a high proportion of tertiary and university graduates with backgrounds such as science, horticulture, environmental management and wildlife management. Rural fire services personnel frequently exhibit having a sense of belonging to their rural community and are usually passionate about their communities.

Land management personnel in contrast are also passionate about fire ecology, and take into consideration how fire impacts on flora and fauna habitats. This is because some trees need fire to regenerate and for some

animals, fire can be beneficial to their habitat while for others it is detrimental. These organisational goals are defined by the differing agency purposes (fire suppression; land management). It is important, therefore, for these different agencies to come together, pre-fire season, to discuss their perceived needs and objectives for any future (planned and unplanned) fires and establish plans in readiness. However, whilst agreements and plans have previously been made as to what tactics might be employed before the fire season, participants talked about how, at times, these plans were dismissed in the heat of the fire based on different organisational (and cultural) goals, as shown in the following quote.

> I've seen the guys at times when the [rural] fire services come along and all they want to do, all of a sudden they put their priorities on the [suppression of the fire], and as a result, the tactics that they employ have been completely opposite to what was the arranged pre-fire season to what should happen. The (name of land management agency) guys get so frustrated, because they have gone to extenuating lengths to try and plan on how that fire should impact on that area [QFRS_05].

It is not surprising therefore, that there is a sense of frustration within the land management group. As indicated here, there is a perceived tendency for rural fire agencies to emphasise fire suppression goals and in doing so inevitably undermine the goals or objective of land management agencies by using tactics that are contradictory to pre-fire season arrangements.

The following quote shows that once groups recognise the differences in values and motivators behind goals between fire agencies and land management agencies, and accept those differences, both groups can work to achieve a more mutually satisfying collective outcome.

> I think that understanding one another's background and where they're coming from is hugely important. Yeah I remember a fire

> at (name of place). I couldn't believe it because they [land management agency] weren't doing any planning for the community of (name of place). There were a range of people in the room who were all worried about some possums... so a lot of energy [was] going into that…and I'm kind of sitting there saying, *I appreciate the need to do something'[but]'you know our priorities are all wrong here'*. Anyway we moved on and planned how to minimise the fire impact on (other name of place). And that was about [showing] respect. Once we'd identified that '*yes the possums were an issue'* and the guy that was quite passionate about it, he went off and worked out some strategy [to deal with the possums]... But then that allowed the team to then focus on the greater, on the higher cause [QFRS_12].

In the above quotes, there is evidence of the differences and areas of potential tensions between the two groups, that is, fire agencies and land management agencies, regarding their respective goals. It could be claimed that the participant experienced a sense of bewilderment that wildlife would be given priority over people and infrastructure because it was getting the attention of the decision makers. It is contended that the participant also experienced a sense of concern, even fear for the community and a sense of frustration with his perception that wildlife was taking precedence over the people in the community. What is also important here is that while he was frustrated that the focus for many was on the protection of wildlife, he accepted that for land management agencies, this is their priority. Once '*respect'* was shown, by identifying that *'possums'* needed protecting, the groups were able to *'focus on the greater, on the higher cause'*.

These cultural differences between land management agencies and fire agencies are driven by different organisational goals, which in turn foster different group identification, based around the organisations' missions (and other in-group and out-groups) that have emerged through the two

groups having different norms, values and beliefs. In addition, organisations typically display their missions and values through their cultural symbols. Cultural symbols communicate collectively held values of organisational goals which intertwine because they are connected to people's emotions and identity. Symbols provide meaning to people's work activity (Holland & Valsiner 1998), and according to Vygotsky (cited in Holland & Valsiner 1988) are mediating devices that are products of, in this case, organisational history.

6.2.1.1 The cultural symbolisation of artefacts

Groups such as fire agencies and land management agencies can communicate their organisational goals and values through their emblems that can be seen on artefacts such as letterheads, report covers, internet websites and uniforms. Symbols can be established in almost any form of a group's artefact that is considered meaningful (e.g., emblems, badges and language).

The following quote provides an example of how symbols, specifically an agency emblem on a uniform, becomes a (socially constructed) mediating device. In this instance the symbol is invoked to distinguish one group that hold different collective organisational goals, from another.

> You get a fire that might be in a national park area, by and large because our fire service is so large we will tend to be on the ground before land management agencies. And as a result they're [land management agencies] probably coming in as second response, even though they're probably in charge. I don't know whether the people who are on the [fire] ground will actually appreciate / I'm talking about fire service people, will appreciate what the status or what the responsibility is that other agency will have. In contrast, if it was an event where our people went along to a job and it was a police officer, straight away our people

> would recognise the rank and authority of that person if it's a uniform position, compared to some person wearing a (name of animal) on his shoulder...[Name of organisation withheld_07].

In the above quote, the participant is talking about the tensions between fire agencies and land management agencies. He is explaining how when a fire breaks out on public land such as national parks, more often than not fire agencies are the first responders. This is largely, in part, due to the fact that fire agencies have more personnel and they may be closer to the site of the fire. The division between the two groups has potential to cause another tension. It is argued that fire agencies are showing limited respect for the authority that land management agencies have on public land because they have on their uniform a symbol that has less perceived value to those in the fire service.

Illustrated here is that these thoughts, tensions and feelings are socially constructed by the symbols worn on agencies' uniforms. In this story the participant is showing how members from fire agencies give meaning to two symbols. The two symbols are, on the one hand, the emblem and rank on police uniforms and, on the other hand, the emblem on land management agencies. Figure 6.1 provides examples of emblems from various fire and emergency agencies. While police are identified as an authoritative figure by people in general, it is argued that in this instance, members from fire agencies identify with police because of their similar paramilitary structure. This sense of affiliation is socially constructed through the emblem, crowns and stripes worn on police uniforms, which are similar to fire agencies emblems (see Figure 6.1). On the other hand, the emblem worn on land management agencies' uniforms displays no

ranking structure. Instead the emblem brings to mind the importance of the values that land management agencies place on protecting wildlife.

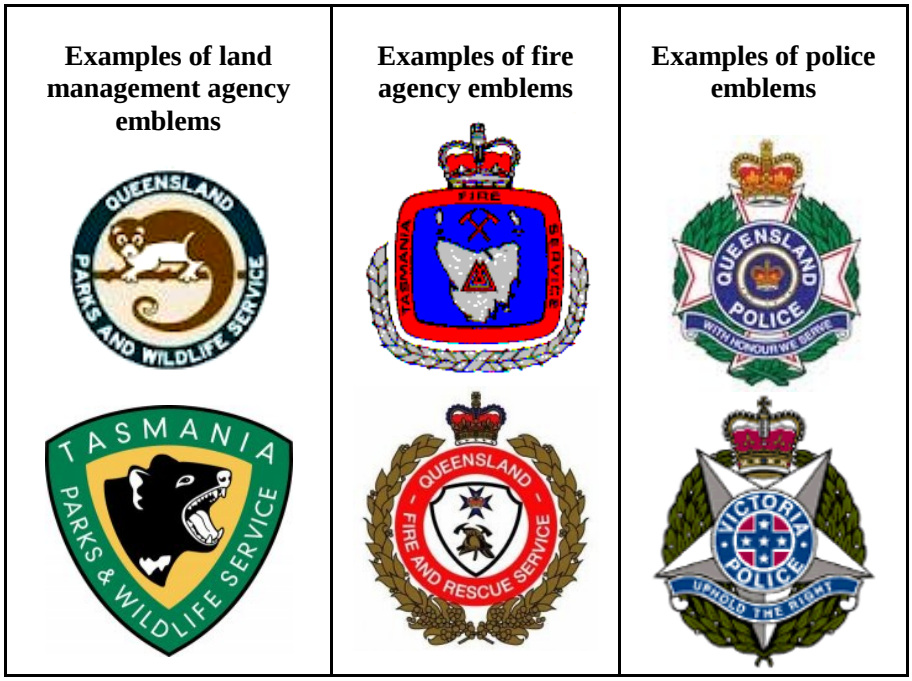


Figure 6.1 Examples of agency emblems

6.2.2 Differences between fire services and their purposes

A distinction that identifies the type of work fire services undertake is whether it occurs in rural or urban areas. Urban fire services' work consists of structural fires; for example, fires that burn houses in suburbia or on the urban interface, or indeed in high rise buildings in the cities. Rural fire services' work is carried out on the urban interface and in rural areas. There are different priorities and demands placed on urban firefighters as opposed to rural firefighters. For example, urban firefighters predominantly manage structural fires that are, arguably, more readily bounded. Rural firefighters, on the other hand, predominantly manage

wildfires that overtake large areas of property which are not so easily contained due to a number of factors such as weather and terrain.

Given the amount of fires that break out in rural areas in Australia, fire incident management relies heavily on volunteers. Volunteers are seen by participants as people who are *'extremely valuable'* because of their local knowledge and experience in specific areas. One participant recalled a conversation with a local farmer who was a rural firefighter.

> If you had a USB key you could stick it in his brain, he was brilliant and we [incident management team] just were sucking all this stuff out and I just sat there with him and started marking up all these watering points and tonnage capacities of different culverts all over this map... [Parks_08].

The value of the local farmer comes from his intimate knowledge of the local historical experience of living in the community. Unlike urban firefighters who gain their knowledge largely through formal learning, rural firefighters such as the farmer in this story typically develop their knowledge informally.

6.2.3 Differences between fire services and their operational tactics

While rural firefighters are valued by incident management personnel, they are also seen by some as not being as disciplined or as well trained as their urban fire service counterparts. A number of participants made comments such as *'unless we can discipline them and hold that discipline, things won't work'* [QFRS_11] and *'you have to pull them back'* [DSE_04]. The following quote is from a conversation with an incident controller who was recalling a time when a fire had been burning for three days before the

rural firefighters asked for assistance. In his story he talks about putting '*a structure in place'*. In this instance the word 'structure' means having a plan and setting up resources.

> I went out and headed that team and we put a structure in place and we deployed some aerial resources. We extinguished the fire in a couple of days with the deployment of the right amount of resources...Even though we're one [i.e., an integrated] fire service [with rural and urban firefighters] there is still a culture of rural fire service versus urban fire service and they [volunteers] tend to try to handle the wild fire incidents within their own [part of the] organisation. It's only when the event turns pretty nasty that they will call on extra resources... I suppose it's a pride thing if they can manage it with their local resources they will [QFRS_08].

The above quote illustrates that while people are in the one integrated fire service working for the same outcome, there are cultural differences between urban fire agencies and rural fire agencies. It would appear from the quote that rural firefighters want to work with their own group. In incident management, when subgroups are working in isolation rather than interdependently, fragmented processes can occur which have the potential to lead to unfavourable outcomes. The Incident Controller's reasoning as to why rural firefighters' work is carried out independently is because of pride. It could be argued that managing the incident locally provides rural firefighters with a perceived sense of ownership, autonomy and empowerment. It could also be argued that when external groups come in to support rural (local) work groups, rural firefighters experience a sense of being threatened which is exacerbated by the tension between urban and rural firefighters.

Many participants voiced the distinction between urban fire agencies and rural fire agencies in how they conduct their work. While both groups of

firefighters fight fires that burn buildings, urban firefighters are regarded as preferring a more structured organisational approach, as illustrated in the following transcript.

> Urban firefighters, they're people who like structure, they like processes and procedures. They like boxes and things to be ticked and crossed, so therefore they're people if you tell them what you want them to do, then they will go and do it [TFS_06].

Urban firefighters work in organisations that are arguably highly regimented, where there is a rank and a chain of command, as previously mentioned. Rural firefighters' work, more often than not, is undertaken by volunteer firefighters who come from a range of working backgrounds, many being self-employed farmers (as mentioned previously), with a self interest in protecting their own, and others' assets.

It is not uncommon when subcultures occur, such as geographical distinctions, that each group in different locations will then create another set of subcultures. It will be illustrated in Section 6.2.4.1 that, while urban firefighters and rural firefighters develop subcultures from their geographical locations, there are other ways in which culture develops with these two groups; that is, hierarchical and occupational distinction.

6.2.4 Organisational structures and its impact on culture

The workplace can be conceptualised as a social unit. This is because individuals' thinking processes, performance strategies, and learning through work are directed by joint social contributions that create the cognitive and social experience (Valsiner & van der Veer 2000). Within this social unit, various groups of workers socialise in different ways depending on the context (i.e., organisational structures and cultures) of

the environment. The groups within the workplace are formal and pre-determined, as previously discussed. One of the ways in which work can be organised is by segmenting vertically into hierarchical groups and horizontally into functional groups. A number of studies (e.g., van Manen cited in Frost et al. 1991; Young cited in Frost et al. 1991) show that subcultures are created when there are functional and hierarchical distinctions. As a result, cultural differentiation manifests and tensions can occur.

Within incident management, the hierarchical structure develops groups that are situated locally, regionally and state, as shown in Figure 4.2 in Chapter 4. Functional groups are also geographically dispersed. For example, ground crews are located at the fireground whereas incident management teams are located at an incident control centre which is located away from the fireground.

6.2.4.1 Hierarchy and power relationships

A number of participants talked about the division between state levels of organising and local incident management teams and how, at times, what they perceived as political agendas, dictated from the top down, influence the way in which incident management teams carry out their work. The following quote is from an incident controller who is talking about what he would like to change in order for incident management teams to be able to conduct their work more efficiently.

> One thing I would like to change / take the politics out of it. Sometimes we [incident management teams] flog resources, try and put out a fire that we know we're not going to [be able to] put out but we need to be seen doing something while in reality we've flogged resources for a week more than we should have done. We

> could have just let it burn and it probably wouldn't have burned any more than what it burned anyway. Politics [to be seen to be doing something] sometimes has an influence on what you're doing and why you're doing it. An incident can escalate on you when you have severe weather conditions and you don't have enough sufficient resources in place early enough and you don't have coordination of those resources on the ground [name of organisation is withheld_03].

The community frequently perceive firefighters as heroes and rescuers supporting communities in whatever way they can. It is the interaction between politically appointed ministers and state level bureaucrats and those on the ground that has socially constructed these identities. It is inferred in this quote that the incident management team knows what the politically appointed ministers and the communities expect from them, even though it is contrary to their beliefs and values.

In this quote from the Incident Controller, it can be argued that there is a sense of tension and frustration because the incident management team had to manage the resources (e.g., ground crew, appliances) in such a way to '*put out a fire that we know we're not going to [be able to] put out'*. The Incident Controller uses the term '*flogged resources'* which includes human resources. How disheartening it must be knowing that energy is being wasted on fighting a fire that will inevitably run its course.

While incident management teams have their own culture, there is evidence that the incident management team needs to, at times, adopt political interpretation of values and beliefs to be seen to be doing the right thing even though they know it will be ineffective.

Incident management groups are defined is by the kind of work they do and the location in which they work. Hence, these groups represent a

functional distinction in incident management. It will be shown that with differing values and beliefs within each functional group, another set of subcultures emerge.

Within incident management are two groups that manage the incident at a local level (see Chapter 4). They are incident management teams and ground crews. One of the functions of the incident management team is to provide support to those firefighters on the fireground, as discussed in Chapter 4. The ground crew may be segmented into various sub-resources: strike team(s), task force(s) and single resource(s), as shown in Chapter 4. The function of the ground crew is to use its resources to fight and manage the fire. While each of these groups has its own functions, they are required to be working together to manage the incident at hand.

A key element to managing an incident efficiently and effectively is having two-way communication between those on the ground and those incident management team members providing support and guidance. Sector commanders, who oversee the ground crews, and the Operations Officers within the incident management teams, are the conduit for this to happen. The participants' stories, however, revealed at times that there is poor information exchange between the incident management team and ground crews, based on cultural differences, which can create a barrier to working seamlessly together. Many participants indicated they were, at times, '*flying blind*' due to the lack of information from ground crews.

The following quote is from a planning officer whose function is to collect, analyse and disseminate information that will provide a plan to manage the incident. He is recalling a time when managing an incident did not work so well.

> They [ground crews] were offering all the advice out of the sun [to each other] but not to the incident management team. They were consuming the air com [communications]... we weren't getting proper intell [intelligence] from them so we didn't have a clear indication [of what the situation was]...it shouldn't have been too much of an issue, but we had these old country guys out there [who] complained about everything... So as a planning officer I found that rather frustrating to come up with a plan when I didn't know what was happening [TFS_03].

From the above quote, it is evident that the ground crews were more active with the fire and sharing information amongst themselves rather than concentrating on feeding the information back to the incident management team. According to Salas, Burke, Wilson-Donnelly and Fowlkes (2004), when there are distinctions between in-groups and out-groups, people who are within the in-groups work closely together; however, those people are less likely to share information and place less value on the input from people in out-groups.

As noted in the above story, the Planning Officer found it *'rather frustrating'* with the lack of information that the incident management team was receiving. It is argued then, that other incident management team members' emotions may have also been influenced. This is because moods can transfer amongst individuals in the group and can influence group dynamics (Barasade 2000). It is also contended that other team members' work performance may have been influenced due to the lack of quality and timely information being received from a crucial component of the incident management structure. The planning section and operations section within the incident management team need to be cognisant of what is actually happening in the field so that the incident action plan they develop actually relates to what is happening on the fireground.

There is also indication in the above quote that the cultural differences could also be due to the fact that the ground crew were rural firefighters who have been described as '*working independently*', as discussed earlier in this chapter. Another element to consider here is the attitudes of the ground crew. It could be argued that ground crews perceive that they do the 'real' work while incident management teams are in the 'office' trying to manage the fire (and interfering with the people doing the work on the ground).

While it can be seen that subcultures have emerged through functional roles and geographical location, it is contended that another way in which this cultural difference has manifested is due to generational differences. In the quote above the Planning Officer referred to some of the ground crew as '*old country guys'*. A generational division of organisational culture is based on 'who is perceived as old and new to the organization... (and this) underscores the way in which organizational history shapes the present' (Keyton 2005, p. 59).

As mentioned in Chapter 4, the Australasian Inter-service Incident Management System was formally adopted as a national system in 2003. Given that the history of experience that people in the fire and emergency services industry have is typically 20 years or more, it is contended that many of the divisional and sector commanders were fighting fires long before this system of incident management (i.e., AIIMS) was introduced and may also find it difficult to adapt to the new system. While some ground crew are seen as *'old country guys'*, there are many who have become firefighters in more recent times and would not have the same views and belief systems as other rural firefighters. From this perspective

it can also be difficult to exhibit the consistency of organisation-wide consensus (Martin 2002; Alvesson 2002).

In examining the division of labour between incident management teams and ground crews, it could be argued there are differing perspectives on the value given to disseminating information. It would appear that ground crews value sharing information amongst themselves in order to manage the fire, whereas incident management team members value sharing information between the two groups.

Other participants talked about the cultural differences between incident management teams and ground crews from the perspective of the ground crews, as illustrated in the following quote from an incident controller.

> I was talking to a sector commander of (name of fire)... and his frustration was that he had this patch of fire that he was responsible for. He knew what the overall control objective of the fire was. He knew what strategies[6] and tactics[7] he needed to employee in his part of the fire. He fed the information up through the divisional command point to the incident management team to get put into the incident action plan, and each time that the plan would come back to him it was completely different to what he was doing. And whilst he didn't say it outright, I get the sense that he basically ignored the incident action plan because he knew that what was on the plan wasn't right [CFA_03].

[6] Strategies outlines what approach is to be taken in working towards achievement of an objective.

[7] Tactics are the tasking of personnel and resources to implement the incident strategies. Incident control tactics are accomplished in accordance with appropriate agency procedures and safety directives.

From the story above, it is evident that the Incident Controller acknowledges that sector commanders have a fundamental role in incident management. As mentioned previously, sector commanders who are on the fireground and operations officers who are within the Incident Management Team are the conduit for information exchange. Sector commanders also have the responsibility of implementing their portion of the Incident Action Plan and the allocation of resources within their sector on the fireground. While sector commanders are advised of the incident objectives and strategies for their sector by the operations officer, it is the sector commander that makes the decision of which tactics are required to implement the strategy (AFAC 2005). Given this responsibility, it could be argued that sector commanders see themselves as controllers for the fireground. It is not surprising that the Sector Commander might feel a sense of '*frustration*'. It could be argued he perceived he was being undervalued and undermined by the incident management team when the incident action plan came back to him and it was '*completely different to what he was doing*'. It could also be argued that this is why, in some cases, 'rurals' do '*work independently*'.

6.2.5 Employment relationships

As discussed in Chapter 4, Australia relies heavily on volunteers to manage rural fires. Without them, fire agencies would not be able to cope with the demands. Urban firefighters are also known as career firefighters, and while they are passionate about their work, it is highly likely they are also motivated by their remuneration. Rural firefighters, on the other hand, many of whom are volunteers, are fighting fires because they want to. It could be claimed that in doing so, it provides volunteers with a deeper

sense of belonging to their community. It could also be claimed that having a stronger sense of belonging means there is more at stake when problems occur, which could potentially lead volunteers to experience competing goals (e.g., the extent to which properties should be defended and their capacity to defend). When competing goals occur it can result in direct (e.g., intra-personal conflict) and indirect (e.g., inter-personal conflict) effects on affective experiences, future goals and motivation. With these differing motivational commitments come varying values, beliefs and expectations.

> There's always the clash between the volunteers and the paid firefighters with the time on the fireground and I've been on both sides of that one. *'I'm a volunteer, you shouldn't expect me to sit here and patrol this knock up line for 12 hours'*. Then on the other token *'we're professional firefighters, why are we sitting here patrolling a knock up line when we really should be doing the professional work which is why you bother to train us up and it's what you pay us for.'* And I'm not as confident necessarily about their skills...I know they [urban/career firefighters] have been trained to the national standard and it's not that volunteers don't receive some training, but they don't necessarily have the same [TFS_04].

In the quote above, it is evident that firefighters define themselves by the kind of work they do, in this case, paid and unpaid. There is also evidence that the division is based on perceptions, valuing different forms of expertise. According to Irvine, Kerridge, McPhee and Freeman (2002), professional culture is based on language, expertise, identity and any other intellectual differences which can emerge through training procedures and on-the-job socialisation. As discussed in Chapter 4, in most agencies, career firefighters are trained to a higher level of national standard than volunteers are trained. It could be argued that the level of training that firefighters undertake has played a part in the distinction between paid and

unpaid work. As indicated here, this distinction has influenced the attitudinal behaviours of some paid firefighters towards unpaid firefighters.

While *The Australian Concise Oxford Dictionary (2002)* defines professional as 'engaged in a specified activity as one's main paid occupation', it could be argued there is also a sense of arrogance in career firefighters when they identify themselves as *'professionals'*. Some participants specifically chose not to use the word '*professional'* when talking about career firefighters because it can infer that career firefighters are somewhat superior to volunteer firefighters. Other participants spoke about how some career firefighters are somewhat 'precious' and will pick and choose the tasks they want to do, as demonstrated in the following quote:

> The one we [senior personnel] get all the time is the professionals will turn up, they'll spray hoses around and when the fire is sort of out they'll say '*righto, we'll leave the rurals to do the dirty work, the mopping up and all the hard yakka'* [QFRS_01].

From the above quote, it could be argued that some career firefighters display an egotistical presence in their spoken language and undervalue the work volunteer firefighters do.

So far, this chapter has demonstrated that cultural differentiation between workgroups within incident management exists. This is because each of those groups has different norms, values and beliefs based in different structural elements. Such differing norms, values and beliefs establish the way in which subcultures and group identities are formed. It has also been illustrated that cultural differentiation between the various groups influences the way in which people carry out their work within, and

between groups. From the participants' stories however, there is also evidence that there are times when the differences between groups are not so strong. This is because people have collectively held norms, values and beliefs in which cultural integration occurs. The next section discusses what participants perceive as being important in managing incidents effectively and efficiently.

6.3 Shared histories of experience

As discussed in previous chapters, incident management work is complex and is physically, cognitively and emotionally demanding. While some of the work is routine, there is an element of managing the unknown because of the nature of the environment (e.g., fire behaviour, weather, terrain and resources). In such situations, it is important for people to have confidence and trust in the way in which people manage under uncertainty. Trust is defined by Mayer et al. (cited in Stokes, Lyons & Schneider 2011) as 'the acceptance of risk or vulnerability from others based on positive expectations' (p. 13) and is, in part, established through the perceived ability of others, in terms of their 'skills, competencies and characteristics related to the specific situation' (Hughes, McCoy, Severe & Johnston 2011, p. 129).

The following quote is from a planning officer. He is providing an example of an incident management team that worked well. This participant suggests that working well together is based on people's shared histories of experience.

> Okay, the good one would be fires on the (name of place) ...we all knew each other...so we'd worked on fires before...well its really based on personalities, how well people work together, that's very

> important in the whole lot. That's what I've found on many occasions. Because once it becomes really busy you have to start looking for people that you have worked with [previously] and you know how they change. If you know them and you know the point they will snap that very important [because] for some people given how they operate under pressure they crack before you notice anything [NSWRFS_03].

While the participant indicates working well together is based around knowing each other and knowing people's personalities, it is argued that the reason the incident management team worked well goes beyond this. It is more about how people might express emotion and at what point that emotion might overwhelm their decision making and lead them, for example, to *'the point they will snap'*. It is contended, however, that what people are actually valuing is having confidence and trust in knowing when others will *'snap'* when placed under high demands, especially in times when the situation is unpredictable. It could also be argued that while trust can be built with new team members based on group membership and similarities, trust that is historically built through repeating interactions over time (Stokes et al. 2011) forms a deeper sense of trust. Hence, '*once it becomes really busy you have to start looking for people that you have worked with [previously]'*.

While some participants talked about having confidence and trust in others, there were also participants who talked about the importance of having self-confidence to be able to manage the situation, especially in times when the situation is unpredictable. Participants expressed how *'people need to be able to read the situation'* and have *'a deep understanding of what needs to be done'*. Other participants talked about how not making a decision is sometimes worse than making the wrong decision, because this can show lack of confidence in judgements as well

as making decisions. Many participants conveyed that because the context of an emergency is ever-changing, it is best to work out a strategy, carry it out and wait, then change it accordingly. In the following quote, the Planning Officer is talking about what makes an incident work well, and it illustrates that when people display self-confidence, others become confident in them.

> I reckon a feeling of calmness and things were ticking over, you'd say it [the incident] was working well 'cause once things have calmed enough/ the meetings are going on, the flow of information's working well, things are getting contained and things seem to be just happening the way they're supposed to, especially to the plan, you say, *'well yeah!'*... But if it feels uptight and jumping around, it's more of a reactive type of operation which isn't helpful 'cause then the planning's just not / it's behind the eight ball all the time... it makes it very difficult to bring it round and once you get things rolling you can sit back and say *'righto we should be ready for this, we should be ready for that'*, and things can calm down and then you can see it / feel it ease up a little bit and people just sort of start working ...you need people [who are] sure of themselves [and] confident in what they do. Those sort of people, it doesn't take them long to start calming down and to getting things into a process that seems to be working well... they seem to be the ones that it [work] just sort of flows [TFS_01].

The Planning Officer's story above shows there is a focus on the *'feeling of calmness'*. It is argued that feeling calm can bring forth a sense of relief. In contrast, when an incident is not going so well, there is a feeling of being *'uptight and jumping around'*, a sense of being agitated. In this situation, the participant perceives the strategies to be more *'reactive'* because the planning is *'behind the eight ball all the time'*. There is also indication in the above quote that a sense of equanimity allows people to do their job well and that people who are *'confident in what they do'* assist in managing an incident effectively and efficiently. It is argued that when

people '*start calming down',* they are displaying a sense of level-headedness. People who are level-headed are able to read the situation, gain an understanding of what needs to be done and be confident in making a decision. Each time a strategy needs to change to accommodate the situation, they are confident that the next decision they make is the right decision.

It is interesting to note that this participant perceives people who have confidence in what they do contribute to the sense of flow. 'Flow', according to Csikszentmihalyi (1992), 'is the way people describe their state of mind when consciousness is harmoniously ordered, and they want to pursue whatever they are doing for its own sake' (p. 6). When people are experiencing 'flow', their 'self-consciousness disappears' (p. 71) and are transported to perceive 'higher levels of performance' (Csikszentmihalyi 1992, p. 74). This suggests there is a linkage between a sense of confidence and experiencing 'flow'.

The following quote is from a logistics officer who works for a land management agency. The Logistics Officer's role is to manage all the human and physical resources, facilities, services and materials to provide logistical support during an incident, as discussed in Chapter 4. According to the participant, the fire was relatively small, but on a very steep rocky site where, if it crested the hill, it was going to get into a national park area and be able to spread. On the incident management team there were land management and fire agency personnel. This transcript provides an example of an incident management team that worked well.

> We had great experience in all the roles; we had good understanding of each other's skills and talents. We had a real commitment to get this [fire] stopped as soon as we could,

> because of what was facing us if we didn't. We had really committed to crew and it just flowed. We had the support also of the local community in terms of shops opening early for us, bakers going out of their way to help us, accommodation places fitting us in. It was just really succinct, highly skilled, highly talented and highly committed event and it went really well. We were there for five days in the end, and yeah, we had ground crews from PARKS and TFS, and we had a really good ops [operations] officer. He had a full understanding of the situation, and he had the resources at his disposal. [He had] great organisation [and] really good communication skills. [He was] just diligent, thorough, communicative and supportive [Parks_07].

In the above quote, there is evidence that having *a 'good understanding of each other's skills and talent'* is important. It is contended that having experience in all the roles and interpositional knowledge, that is, knowledge about the environment, tasks, roles and appropriate behavioural responses required for his/her team members (Volpe, Cannon-Bowers & Salas 1996; Smith-Jentsch, Campbell, Milanovich & Reynolds 2001), has contributed to having confidence and trust in the team. It could also be argued that the commitment of the group and the sense of trust influenced collective efficacy which also assisted in the groups performing well. As noted in Chapter 2, collective efficacy is about a team's collective belief that it can successfully perform a specific task (Lindsley, Brass & Thomas 1995). The linkages between collective efficacy and performance will be discussed further in Chapter 7.

It is contended that while the management of the incident involved people from different groups (e.g., ground crew and an incident management team), the differentiation between those groups that is at times experienced, was not obvious at this particular incident. In fact, what people were experiencing is integration amongst the groups. There is also

evidence to suggest that there was a sense of confidence and trust between land management personnel and fire agency personnel who were working in the incident management team and that this also contributed to the unity between the incident management team, ground crew and the broader community.

Similarly to the Planning Officer's story above, this participant, in her story, uses the word '*flow'* in describing how she felt in managing the incident. When 'flow' is present, an optimal experience will be easier to achieve (Csikszentmihalyi 1992). There is also indication that they were also experiencing a sense of excitement and joy with *'flow'*. This suggests that the positive emotions that people were experiencing contributed to the unity of the differing groups. Thus, the cultural division between land management agencies and fire agencies, and incident management teams and ground crews becomes, for a period of time, non-existent. According to Ashforth and Humphrey (1995), the emotions that members experience, and the interactions they have with each other, influences the collective expectations of how people should behave.

In the Logistics Officer's story, there is also evidence that she had a vicarious experience when she made a point of talking about the incident management team's operations officer who she perceived as being competent in all areas. A vicarious experience happens when an observer identifies with someone who is performing well, as outlined in Chapter 2. It is contended then that the rest of the incident management team members observed the qualities of the Operations Officer and this contributed to enhanced collective efficacy beliefs (Bandura 1997, 2000) and incident management team performance.

6.4 Social identity

As previously mentioned, from a sociocultural perspective, people and the environment are interconnected. It is therefore important to recognise the way in which the nature of self is socially constructed. As mentioned previously, identifying with a particular group enables people to interact with each other in a meaningful way (Jenkins 2005) and allows members to shape a key element of their sense of self. This is because 'social identity is ... that part of the individual's self-concept which derives from his[sic] knowledge of his [sic] membership of a social group (or groups) together with the value and emotional significance attached to that membership (Tajfel cited in Augoustinos et al. 2006, p. 203).

It was illustrated in this chapter that members can have multiple and overlapping identities which are manifested through the values and beliefs of the various groups to which they belong (Augoustinos et al. 2006). Many participants talked about the importance of having a collective identity and a sense of belonging to a team, as illustrated in the following transcript.

> I suppose it's the old Australian thing of mateship. If you feel part of that team, if you're struggling, your team mates won't let you down, they'll come and support you to get through that problem or that issue...they do need to feel that they belong, to be known as the unit identity and our organisational identity is exceptionally strong... my volunteers feel very strongly about their unit identity and much to my enjoyment, they also feel strong about being part of my region. So they actually identify at a regional level, and they feel very strongly about being a member of the state organisation... [CFA_10].

Australians have a cultural identity of the love to experience a close relationship with a mate. The sense of sharing experiences, mutual respect

and unconditional support is something that is particularly important to an Aussie. Historically, the notion of '*Australian mateship'* stems back to early colonial times when the term was traditionally used to describe the relationship between men during tough and challenging times. It is a collectively held belief that an individual should be able to trust his/her friend, and as mentioned previously, trust is an important belief that has become valued in incident management. In the above story, the participant is talking about the importance of feeling part of a team

The importance of collective identity comes across very strongly in the above quote and this was a collectively-held view by the participants who talked about identity. In the above story, this participant demonstrates that collective identity is associated with all agency levels (i.e., *'unit'*, '*regional'* and '*organisational'*).

While the way in which work is organised in incident management ascribes members to groups (as discussed in Section 6.2), this participant clearly voices that he has a strong sense of pride in the group to which he belongs. Thompson and McHugh (1991) argued that group identity is constructed around a coherent set of values and common strategies to maximise extrinsic rewards and desires. The participant is also proud of his volunteers. There is also indication in the quote that there is mutual respect between this leader and his volunteers.

6.5 Chapter summary

This chapter addressed the research questions: What cultures can be identified within incident management work groups? (and) What affective experiences are influenced by organisational culture? The chapter

commenced by discussing work groups within fire and emergency management. Although each agency (i.e., land management agencies and fire agencies) shared common goals of managing incidents, there were divisions that have deep historical roots within incident management which can be ascribed to the organisation's structural goals that have built up around that work.

Functional distinction (e.g., incident management teams and ground crews) within incident management also revealed cultural differences in the way in which information was exchanged. While the various groups (and subcultures) within incident management have their own norms, values and beliefs which differentiate the groups, there were times when personnel had collectively held norms, values and beliefs in which a shared cultural understanding occurred. It was illustrated in this chapter that the beliefs that people hold about themselves and others (e.g., trust and confidence) is what people valued in making effective incident management and that such beliefs evolve with shared histories of experience.

This chapter also discussed evidence of the affective experiences that influence and are influenced by incident management culture. The participants, in recalling their experiences, illustrated that there were times when people became frustrated and felt tension between the various work groups. Such feelings occurred when ground crews and incident management teams, for example, worked in isolation from each other. As a result, fragmented processes in work activity between groups occurred. Other feelings that personnel experienced included bewilderment and disempowerment in particular, when one group undermines another.

Not all affective experiences were negative, however. When there was a shared history of experience, for example, group members were able to determine the degree to which they had confidence and trust in others. When people had confidence and trust in the way in which people managed uncertainty or had self-confidence to be able to manage the situation, positive affect (e.g., calmness, flow and collective efficacy) was experienced.

7

CHAPTER SEVEN

INCIDENT MANAGMENT TEAM MEMBERS' COLLECTIVE EXPERIENCES

7.1 Introduction

Chapter 6 discussed some of the cultural elements in incident management. This chapter will analyse the way in which affect influences collective performance in incident management teams. As outlined in Chapter 4, the incident management based system for fire and emergency management is known as AIIMS, and the core group within this structure are incident management teams. It was shown in Chapter 6 that a key conceptual tool for analysing the nature of collective work in incident management is culture. This chapter will build conceptual models of teamwork that illustrates the influence that historical developments of cultural elements can have on collective experiences (e.g., coordination) and to illustrate how the sociocultural mediation of affect influences team performance. This chapter will conclude by discussing a sociocultural model of affect for teamwork, and highlight the importance of the interconnections between affect and culture and the roles they both play in teamwork.

The purpose of this chapter, then, is to address the following two research questions:

- How can the roles of individual and collective affect be conceptualised?
- What are the ways in which affect intersects with sociocultural contexts to influence incident management team performance?

Through the participants' stories, it was revealed in Chapter 5 that a sense of self and self-efficacy beliefs have important roles in assisting personnel to manage the demands of working in such a dynamic and complex environment. In addition, Chapter 6 discussed the way in which sociocultural context influences affect. It was shown in that chapter that the participants' stories about their work activities are shaped by their work groups' norms, values and beliefs. The data in both Chapter 5 and 6 showed that engagement in work activity is embedded within people's cognition (thought) and affect (feeling) that cannot be separated. Moreover, it is also argued that cognition and affect cannot be separated from their contexts. For example, it was shown in Chapter 6 that the organisational context (e.g., agencies purposes and the division of labour) shapes the history of a groups' experiences which then manifests in culture (e.g., symbols and shared histories of experiences). It was also shown in Chapter 5 and Chapter 6 that people's affective experiences are influenced by the way in which personnel go about their work activity.

7.2 The sociocultural mediation of affect and collective performance

Before discussing affect and its role in collective performance, it is important to acknowledge that while individuals within a team are required to work together to achieve collective goals, a team of individuals are differentiated in a variety of ways. For example, team members perform individual roles and have individual responsibilities. They also bring with them their history of experiences of working in different organisations (often with different values and objectives), as discussed in Chapter 6. As Salas et al. (2007) stated, a team of experts does not make an expert team. Simply bringing people together to perform together does not create effective teamwork. The elements are there but something else is required.

By developing a sociocultural framework, this chapter illustrates the ways in which affect dynamically influences teamwork. It will be shown there are different perspectives of situating individuals in a sociocultural context.

Individuals with differing roles and responsibilities, attributes of work experience and efficacy beliefs working within sociocultural contexts, for example, can represent teams that can also result in team fragmentation (e.g., negative stereotypes) when team members work independently rather than working collectively. Moreover, teams with their differentiation (e.g., working in silos) can also have features of possible team synergy when the team's norms, values and beliefs are collectively held thus, team integration (e.g., unity) occurs.

Figure 7.1 illustrates the linkages between team differentiation, team fragmentation and team integration and their possible outcomes. The

remainder of this chapter further discusses the ways in which team differentiation can either lead to team fragmentation, and therefore the possibility of dysfunctional collective outcomes, or team integration where synergy is present thereby enabling teams to obtain optimal collective performance, as shown in Figure 7.1.

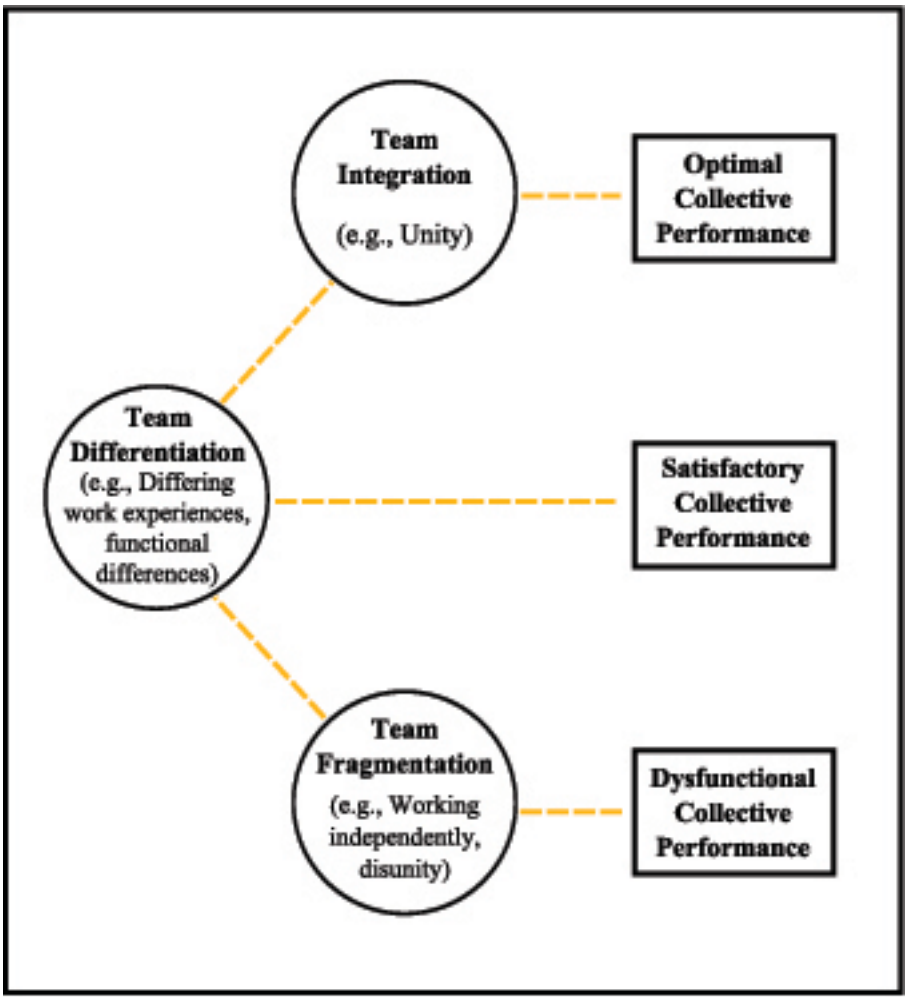


Figure 7.1 Differing teams and their performances

7.2.1 Team differentiation

It was discussed in Chapter 6 that incident management is characterised by a number of different work groups. Furthermore, it is these work groups that also create cultural variety within incident management because each work group has their own set of norms, values and beliefs. It was shown in Chapter Six that such differences can, at times, negatively influence people's affective experiences and the way in which in-groups and out-groups carry out their work activity. This section discusses one of the ways in which differentiation manifests within incident management teams and the consequences of those differentiations on teamwork.

Figure 7.2 shows that incident management teams are constructed with individuals with their own professional identities. The figure also shows that more often than not, multiple agencies are represented within the incident management team; thus, individuals are also associated with their own agency identity as well as with the incident management team. Different functions operate within incident management teams and each of these functions has its own roles and responsibilities (as discussed in Chapter 4) and when each function does not interact to the degree it should, tight boundaries around each function are formed. As a result, disconnects occur and the team's full potential is not realised, as illustrated in Figure 7.2.

When there are team members from different agencies (with their differing organisational goals and culture) and each team has different functional units (with their differing roles and responsibilities), there is potential for existing but not developed (i.e., latent) positive elements of team culture, as illustrated in Figure 7.2.

It is when teams move beyond their differentiation in a positive way to create synergy and therefore team integration (which will be discussed later in this chapter), that the subcultures that coexist become prominent collectively held norms, values and beliefs.

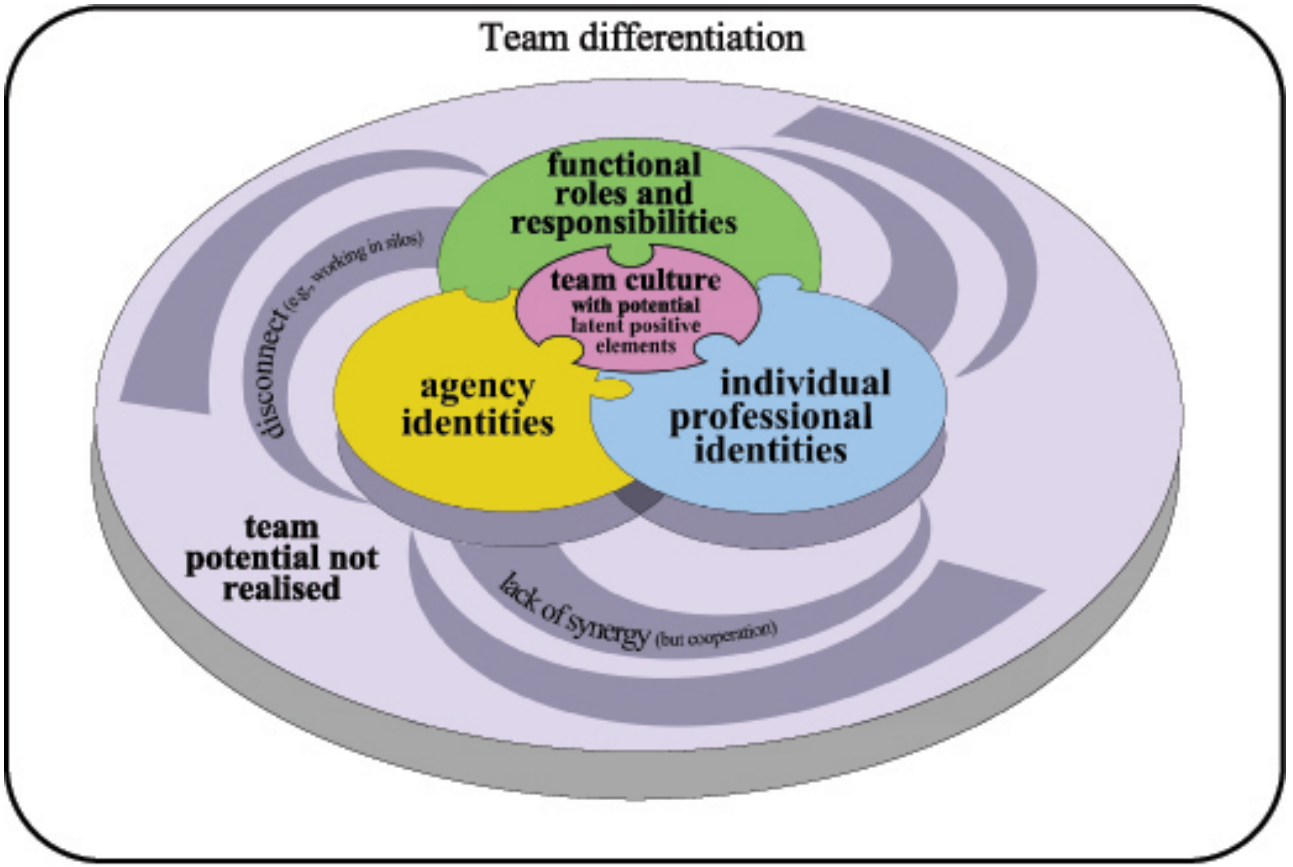


Figure 7.2 Team differentiation

7.2.1.1 Working in silos

Each functional section within the incident management team (i.e., control, planning, operations and logistics) has its own roles and responsibilities as shown in Figure 7.2. Ideally all sections should collaborate with each other in order to meet subordinate goals. However, a number of participants talked about how, at times, these sections do not interact to the degree that they should. The Planning Section and the Operations Section, for example, should have consistent information flow when making decisions for strategies and tactics. If the Planning Section is immersed in its own subgroup activities and has minimal or no input from the Operations Section (and vice versa) then sections can become excluded and become 'work in silos'. In doing so, a tight boundary is built around each functional section, as illustrated in Figure 7.2.

The following quote is from an interview with a participant who was working in the Planning Section. In his story he talks about how his section needed to develop the Incident Action Plan. As mentioned in Chapter 4, an Incident Action Plan is a document that outlines operational objectives and strategies for achieving objectives, and identifies key risk exposures. An Incident Action Plan is revised on a regular basis as the incident evolves to provide up-to-date information across the incident management system. An example of an Incident Action Plan is provided in Appendix 5. In order to develop the Incident Action Plan, the Planning Section needs to glean information from the Operations Section. On this particular occasion that was not happening.

> The group I was with, we were functioning kind of alright as a [sub] team but we weren't working with the operations people. It

> was frustrating because we knew what we needed to do and we couldn't do it [nor could] we do much about it... the team [Operations Section] weren't giving us [the Planning Section] what we needed... it was really unsatisfying...we worked really hard that day and we produced what we had to produce but it was a really crummy job. None of us were very happy with it [the Incident Action Plan]. [This is] because we knew we had to do an Incident Action Plan, and we had produced one but it wasn't really of any use to anyone – it wasn't actually helping. So it wasn't a piece of work we were particularly proud of. So that's really unsatisfying when you just feel like you're wasting time and you're not achieving what you could have achieved [CFA_11].

In the above narrative, the participant explains that although he believes his section was working well, they were not interacting enough with the Operations Section which he found '*frustrating'*.

According to Fineman (2003), frustration can often lead to stress and have a negative influence on performance (McColl-Kennedy & Anderson 2002). It could be argued that participants experienced a lowered sense of collective efficacy in collectively feeling they did a '*crummy job'*. This is because although the participant considered the Planning Section was working collaboratively together, he was not happy with a specific task; that is, the Incident Action Plan that his section had developed. It could be argued that in this instance, individual emotions were transferred, shared and felt collectively (Roth 2007; Barsade & Gibson 2007), which in turn influenced the team's performance.

The collective beliefs of an incident management team are consequential to their functioning and performance. According to Katz-navon and Erez (2005), collectively groups regulate their behaviour in accordance with group members' shared beliefs. This notion was discussed in Chapter 6. It is suggested that the negative emotions felt by the team described by the

participant above are embedded in the lack of sharing of information between the Operations Section and the Planning Section, and that this has contributed to the incident management team's lowered sense of collective efficacy and collective identity. Therefore, it can be inferred that 'working in silos' has inhibited the incident management team's collective effectiveness, as illustrated in Figure 7.2.

The story also illustrates that the incident management team's organisational (and cultural) goals were not collectively held. Sections were not working interdependently and a barrier was been created in information flow with the Incident Action Plan being unsatisfactory. With such actions it could be suggested what is espoused organisationally in fire and emergency management (and incident management teams), which is safety, is not always exhibited, as illustrated in Figure 7.2 with existing but not developed (i.e., latent) positive elements of team culture. Again, this is an example of how barriers inhibit organisational culture.

This section has provided and discussed one of the ways in which some teams, although made up of a group of experts, do not move beyond the different roles team members have and are therefore less likely to achieve the synergies required for effective team performance. As shown in Figure **7.2**, team members remain locked working in silos whereby team potentials are not realised. This is not as detrimental to team performance, however, as when fragmentation occurs. Fragmentation will be examined in the next section.

7.2.2 Team fragmentation

This section discusses the collective experiences of incident management team members when teamwork (and team culture) is characterised by inconsistency, tensions and contradictions. Team members' negative collective experiences include disunity amongst the team and lack of team orientation.

Figure 7.3 depicts team fragmentation by illustrating the relationships between team members' negative collective experiences. It is suggested that team members' negative collective experiences (e.g., such as team member disunity) influences team members' emotions and collective efficacy beliefs. When disunity (e.g., lack of shared values and beliefs) and independency (e.g., negative stereotypes) and a lack of team orientation occurs, team members' collective sense-making becomes impaired. The figure also shows that subcultures coexist and create cultural variety within organisational culture. This is because each subgroup has its own set of norms, values and beliefs, as previously mentioned. While subcultures can nest with each other in a harmonious way (as will be discussed later in this chapter), other subcultures can, at times, be in conflict as depicted with broken lines in Figure 7.3. When this is coupled with ineffective coordination and communication negative collective experiences prevail.

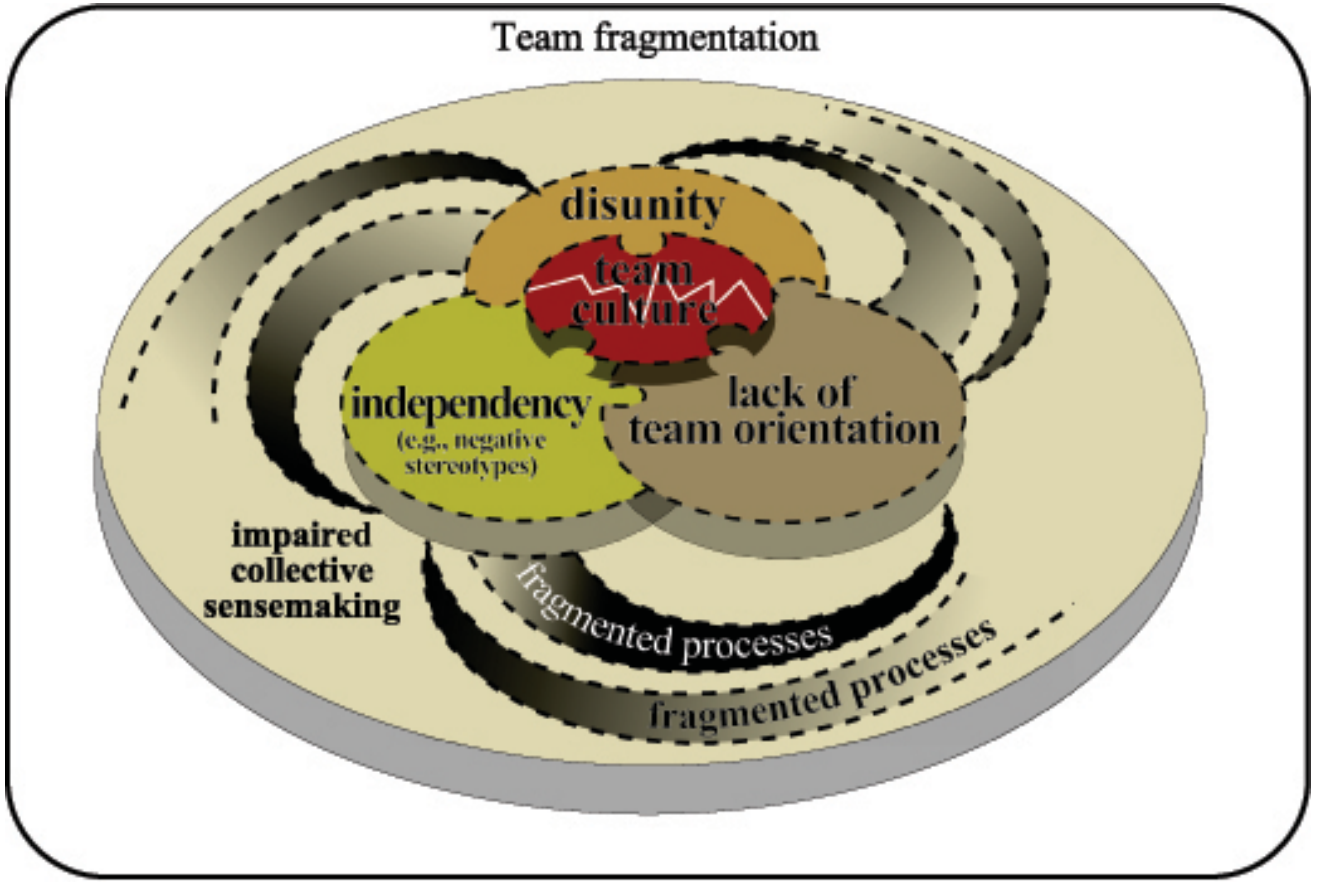


Figure 7.3 Team fragmentation

7.2.2.1 Experiencing disunity

Chapter 6 showed that cultural differences between incident management teams and ground crew have not only emerged through functional roles and geographical locations but also through generational differences. As noted in Chapter 6, a generational division of culture is based on 'who is perceived as old and new to the organization' (Keyton 2005, p. 59) or in this case (shared histories of experience are different), the team.

The following quote is from an interview with a deputy incident controller. He is talking about a time when he worked in an incident management team and the team changed midway through his first tour. The section leaders (i.e., the Operations Officer, the Planning Officer and the Logistics Officer) and some of the other senior team members left and were replaced with other personnel; thus, the team became comprised of 'old' and 'new' members. The 'new' team members were familiar with each other because they had worked numerous times together and, therefore, had shared histories of experience. The 'new' team members came in and assumed their senior management positions in an incident management team of 70 people.

> The dynamics [of the team] actually took I reckon 24 hours to settle down because they [new team members] without knowing it, alienated a lot of the local people [old team members]. I found it difficult because I'd been there for a few days and had the knowledge about where the incident was at, and yet I couldn't actually break in and have an influence over this team 'cause they were such a close knit [sub] team...We had an incident controller who / [was] a very, very competent incident controller, but maybe / arrogant is the wrong word but [he was] very self-assured and very confident in the [new] team they'd brought in. So [he] had a high level of comfort with a small part of the team. [However], a lot of other people [on the incident management team] he didn't

> know and so [he] tended to fall back on the people that he knew…about 24 hours into it [the shift and I had] to say *'Hey I think we need to do some work here or this team's going be truly affected.'* The team did spread out [and] it became more inclusive if you like. Team members did actually integrate a bit more. [However], I've got to say that the feelings that had been generated in that 24-hour period stayed with some people for a while. I guess I almost became the [circuit] breaker, the conduit if you like between the old team and the new team… I had a few of the local people in the incident management team come to me towards the end of that tour still not happy about this team [because] they were still quite bitter about that 24-hour period [CFA_02].

There is reference in the quote to the dynamics of the team changing when the shift changed and new members entered the team; thus, the dynamics of the team are influenced by the in-groups and out-groups within the incident management team. Again, this illustrates how subcultures emerge through the way in which incident management work is organised, as discussed in Chapter 6. It is proposed that one of the elements that can negatively change in the dynamics of team is the level of trust amongst members. This is because, in part, trust is historically built through repeating interaction over time (Stokes et al. 2011), as noted in Chapter 6, and the degree to which cultural difference exists (Hughes et al. 2011). The quote implies there were cultural differences in the team with the pre-existing team members being referred to as locals. Thus, the team was comprised of individuals with differing values and beliefs, as illustrated with fragmented team culture in Figure 7.3.

It was discussed in Chapter 6 that incident management personnel place importance on having trust in the way in which people manage under uncertainty. It is suggested then that working in an incident management team with limited or diminished trust would be unfavourable.

The quote also illustrates that as the newly appointed team members entered the team, they alienated (albeit without knowing) the pre-existing team members. When people are alienated and disconnected from their team members, it is highly likely, their work activity is affected. Thus, it is suggested a lowered sense of mastery would be experienced (Bandura 1977). Mastery experiences play a role in enabling and constraining people's efficacy beliefs. When people lack positive mastery experiences they are more likely to experience lower efficacy expectations, as discussed in Chapters 2 and 6. It will be shown later in this chapter that collective efficacy has an important role in team performance.

With such division within the team it is suggested there is a sense of disunity amongst the team. As such, team members would not be connecting with each other to the degree they need to be in order to carry out their teamwork effectively, as illustrated in Figure 7.3.

It was noted in Chapter 1, that it is important for teams to have a sense of cohesion when working in dynamic and high-consequence environments. It is discussed later in this chapter that cohesion has a role to play in experiencing a sense of unity, which in turn can positively influence a team's performance. It is proposed then that the sense of disunity, which is influenced by cultural differences, contributed to the Deputy Incident Controller's difficulties to impart his knowledge on managing the incident. Thus, it is suggested that such practices would negatively impact on team mental models. 'Team mental model content includes shared representations of tasks, equipment, working relationships, and situations' (Mohammed & Dumville 2001, p. 90). It will be illustrated in Section

7.2.3.2 of this chapter that team mental models are a by-product of the way in which team members feel included and work collaboratively.

The participant's story also illustrates the role that leaders have in teamwork. While the Incident Controller was seen as being competent and confident, the quote implies that this incident controller was not engaged with his whole team. It would seem that the Incident Controller was oblivious to the fact that a large proportion of his team members were alienated from the rest. It was not until the Deputy Incident Controller brought the situation to the Incident Controller's attention that he became aware of the issue. It is inferred in the quote that the division amongst the incident management team brought forth negative (and some lasting) feelings to some of the team members, all of which happened in a 24-hour period.

As Bass, Avolio, Jung and Berson (2003) contend, leadership style amongst a team can influence the extent to which a team member feels part of a team or not. If the Incident Controller in the story was engaged with the whole team and concerned himself with how his team members felt (and were functioning) then the lasting negative feelings might not have developed. Moreover, leaders who effectively manage their team members and emotional processes have a positive influence on performance (George 2000).

7.2.2.2 Team fragmentation and negative stereotypes

This section discusses some of the negative stereotypes within incident management that were identified in the interviews. This section will show that negative individual stereotypes negatively influence other members'

affective experiences and the way in which incident management work is undertaken. According to Augoustinos et al. (2006):

> Stereotypes are social representations: they are objectified cognitive and affective structures about social groups within society which are extensively shared and emerge and proliferate within particular social and political milieu of a given historical moment... They are socially and discursively constructed in the course of everyday communication (p. 258).

The three individual negative stereotypes that were used by a number of the participants (and in different agencies) in this study were '*cowboys*', '*shooting stars'* and '*mavericks*'. The quotes below represent examples of these cultural labels.

The following quote is from an incident controller who is talking about a time when managing an incident did not work well. In his story he provides a description of the behaviours of *'cowboys'*. *The Australian Concise Oxford Dictionary (2002)* defines a cowboy as 'a colloquial term to describe an unscrupulous or reckless person in business, especially, an unqualified one'. As the quote illustrates, the reference to negative stereotypes infers that some were 'unqualified' thus causing tension between career (urban) firefighters and volunteer (rural) firefighters which broadens the division between the two groups, as mentioned in Chapter 6.

> We had a number of crews working and communications were fairly poor and that's got more to do with the communications network that had been established, urban trucks and rural trucks working on different frequencies, so that worked against us. We also had some personnel there who were very poorly disciplined. Basically you could call them cowboys, who decided to, rather than follow the Incident Action Plan, they'd do their own thing... One of them was a rural fire warden [and he thought] we [the Incident Management team were] encroaching on his turf. He wanted to take ownership of his turf so rather than fitting in with

> the Incident Action Plan he was working against us [the Incident Management Team] [QFRS_02].

In the quote the Incident Controller indicates that the Incident Management Team had to cope with the complexities of poor communication due to the network. In addition, there were some ground crew that were not adhering to procedures set out in the Incident Action Plan. There were a number of participants, in some organisations, who regarded some crew/urban firefighters as *'cowboys'*. The quote also provides evidence of the issue of ownership (e.g., 'turf') which again signifies the power struggles between these two groups and amongst incident management culture how this can fragment a team's performance.

As discussed in Chapter 4, the Incident Action Plan is developed collaboratively with each section within the Incident Management Team and divisional commanders or sector commanders who work on the fireground. If the Divisional Commander or Sector Commander requires the Incident Action Plan to be modified then this is conveyed to the Operations Officer in the Incident Management Team so that the Incident Action Plan can be adapted and signed off by the Incident Controller. In the participant's story he talks about a rural fire warden working against the Incident Action Plan, and therefore the Incident Management Team. If the rural fire warden was a divisional or sector commander, he is required to go through the correct chain of command to modify the incident action plan. If he had a position other than a divisional or sector commander, he is required to follow the Incident Action Plan in its current form. The Incident Action Plan is an important document and a key instrument in managing an incident effectively, as previously mentioned. The consequences of not adhering to the Incident Action Plan can put people's

lives at risk. It is also undermining the Incident Controller's authority and not enacting on policies and procedures that are espoused in the organisational processes.

Although rural firefighters might be seen by some as less qualified, they are valuable and typically develop their knowledge and experience informally, as discussed in the previous chapter. There are other firefighters, however, who are less experienced. They are stereotypically regarded by some participants as *'shooting stars'*.

> People [rural ground crew] didn't understand in one of these really big jobs [when it] came up, what they were meant to do, who they were meant to report to [and] what structure was being set up. There were too many shooting stars [all] over the place and it wouldn't have taken much [for] something bad to have happened... there's nothing more frustrating than being responsible for the safety of staff and not having control over it. They don't know because they are very small rural brigades that don't get big jobs frequently [TFS_09].

The reference to *'shooting stars'* in this respect indicates personnel who maybe inexperienced and may therefore panic. *The Australian Concise Oxford Dictionary (2002)* defines a shooting star as 'a small media moving rapidly and burning up on entering the earth's atmosphere'. In providing a cultural analysis of this characterisation, it could be argued that *'shooting stars'* within ground crews could be regarded as people who work and behave in an erratic manner.

It has been discussed in Chapter 6 and earlier in this chapter that what people collectively value is having confidence and trust in others. It is therefore contended that an individual behaving in an erratic manner does not follow the collective expectations of how personnel should behave. Such action has the potential to divide collaborative work and be quite

disruptive and even dangerous. Thus, it is also contended that such behaviour indicates that emotions are not being managed effectively. Part of the Incident Management Team's function is to assist the Incident Controller to provide for the safety and welfare of ground crew (as outlined in Chapter 4); it is therefore contended that erratic behaviour adds to the pressure that incident management team members experience, in particular the Incident Controller who is held accountable and responsible for the overall management of the incident. It is further contended that while the Incident Controller indicated a sense of frustration in his story, he could also have been feeling a sense of fear for others' safety which inevitably would increase stress.

While some firefighters who work on the fireground are regarded as '*cowboys'* and '*shooting stars'*, there are other personnel who work within incident management teams who are considered '*mavericks*'. The following quote is from a participant who is reflecting on a time when he considered an incident management team did not work so well.

> ...it's very hard to contain people when their adrenalin [is] running and put a structure and a boundary around those people. So at times, if there are failures, it'd be to do with those factors. The essence of an incident management team sometimes becomes quite ironic because you have people within that group just doing their own thing. You always have mavericks trying to do their own thing and not stick to structure [MFB_02].

As discussed throughout this thesis, incident management work requires working under extenuating conditions. When people are faced with stressful and dangerous situations, the body provides the natural stimulating chemical adrenalin which assists individuals to deal which such situations. The rush of adrenalin can give people a sensation of being

fully alive. As indicated in the quote, however, there are times when such experiences can have a less than optimal results which can once again lead to individualistic behaviour and thereby fragmenting the team effort, as illustrated in Figure 7.3.

It will be discussed in the next section of this chapter the importance of teams collectively making sense of the environment through members' shared knowledge, interdependency and team orientation. The importance of such elements is related and set up by the team's shared beliefs.

Working in teams is about:

> Some kind of level of awareness by and among group members regarding how they interpret tasks, situations, and event… and that each member be aware of the level of awareness of the other group members regarding similarities and difference of their mutual thought processes (Klimoski & Mohammed cited in Poole 2010 p. 458).

When there is awareness amongst the team and a collective understanding of interaction and tasks, teams are able to achieve their goals (Hinsz & Ladbury 2012). Pivotal to gaining a shared understanding in dynamic and complex environments is effective information exchange where critical information is complete (Orasanu & Salas 1993), concise and properly stated (Schaafstal 2001). Conversely, when there is a disconnect amongst team members there is often lack of information sharing and failings occur (Hinsz & Ladbury 2012), as inferred in the participant's story. It would appear that '*mavericks'* are similar to '*shooting stars'* in the fact that they are individuals working in such a way that they undermine the team effort. While '*shooting stars'* are seen to be inexperienced, this is not necessarily the case with '*mavericks'*. For '*mavericks*', it appears they are likely to be more experienced but still act independently.

This section has discussed that when norms, values and beliefs are not shared and are coupled with disunity and lack of team orientation, teams can become fragmented which, in turn, leads to negative team outcomes. The next section examines the way in which team integration can occur.

7.2.3 Team integration

This section discusses the collective experiences of incident management team members that are manifested in incident management team culture when norms, values and beliefs are shared. Team members' collective experiences include the way in which team members develop interdependency, experience a sense of inclusion, and in doing so set up opportunities to experience a sense of unity and fluidity as they collectively make sense of the events that surround them and act on those environments.

Figure 7.4 illustrates the linkages between team members' positive collective experiences and their relationship to performance. It is suggested that when team members have collective elements such as positive interactions (e.g., coordinating and communicating) and aligned collective affect (e.g., collective positive emotions and collective efficacy), it can lead to team orientation. The figure shows that when team orientation, unity and inclusion interconnect, team members experience a sense of fluidity amongst the team which also assists in collective sense-making. Such collective experiences (e.g., team orientation, unity and inclusion) are connected through team members' affective experiences (e.g., emotions and efficacy beliefs). The figure also shows that these collective experiences, which are considered to be important, are

connected and set up by what the team believes as collectively held values (e.g., trust in team members, monitoring and supporting each other).

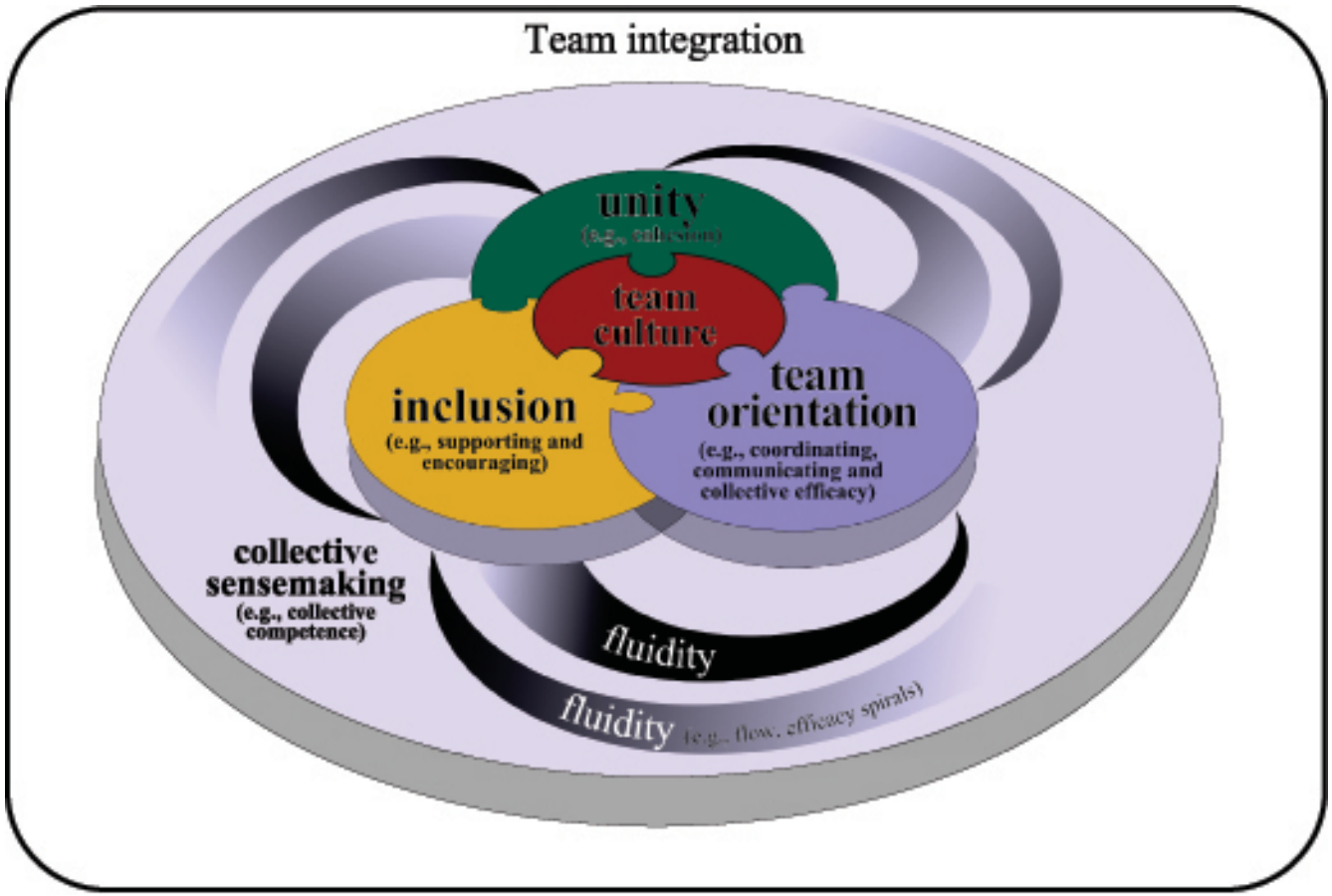


Figure 7.4 Team integration

7.2.3.1 Collective elements that connect to team orientation

Some participants described the way in which collective confidence develops is through being focused on the task, meeting deadlines and having responsibility which in turn develops a sense of connectedness between team members contributing to collective goals. In their discussions, participants talked about the need to have clear guidelines and to be focused, particularly when there is a running fire with lots of assets (e.g., people, houses, infrastructure, livestock) being threatened. When assets are threatened, team members are faced with a large amount of responsibility which in turn creates a sense of pressure. When this pressure is experienced, all team members need to be focused on the task and the way in which they need to interact together. The following quote is from an operations officer who is talking about building confidence in team members.

> I think that that's formed pretty quickly in allocating tasks, and that focuses the team or the individuals on the tasks that they've got to do and, particularly if you create some expectation on when it's got to be delivered…I think that builds a confidence in the person straight away [and] that the task you've set them has been delivered to the satisfaction that was expected, in a given timeframe that was requested. When that happens and you've got all those interactions, well, very quickly I think it [the team] starts to click. You see that you've got a pretty efficient operating machine in that sense [CFA_08].

According to Salas et al. (2007), social interactions that lead to 'adaptive coordinated action' coupled with technical capability develop expert teams. It is also suggested that when team members are interacting efficiently a heightened sense of collective efficacy occurs. Similarly, Gully et al. (2002) found in their study that when task and context

encourage coordination, communication and cooperation, collective efficacy is enhanced. When a team starts to *'click*, it suggests that there is a synergy within the team. As a result, this enhanced positive feeling that comes from interaction activity would contribute to the team's sense of collective competence.

There is also evidence that the interactions contribute to how affective states of individuals can have a cascading affect throughout the team. Initially the participant is talking about building confidence in an individual. He then goes on to talk about the interactions amongst team members, inferring that the confidence and satisfaction has permeated through the team.

7.2.3.2 Experiencing inclusion

Experiencing inclusion is particularly important in incident management teams because team members work under extreme pressure and are subject to cognitive overload, stress and fatigue which can potentially lead to burnout. It is important, therefore, for team members to feel they belong to a team where members are on a collective endeavour to support and encourage each other (as shown in Figure 7.4) to achieve their collective goals, as indicated by a participant who used the analogy of a football team.

> It's a bit like a football team. The football team that is running around without talking to each other on the football ground, they are playing footy. But the football team who are charged up, who are aware of each other, talking to each other are encouraging and supporting. And you will see a lot of it, they will kick a goal and everyone will run together and slap each other on the back... Take that notion and put it into an incident management team. If you have got people who are supportive, encouraging and keeping the

> ball afloat, that is great and I have seen it many times where that has happened where people, even though they are being short, direct and precise, they have also got that wink in their eye and they are saying '*Good on you, thanks very much*' and '*Are you right with that? Can I give you a hand here?*' That in essence builds a team's confidence [CFA_06].

The analogy illustrates the difference between a football team who might have individual players that are highly skilled as opposed to a highly skilled football team. It is proposed that a team whose members encourage and monitor each other and work collaboratively builds a sense of confidence in a team which will assist the team to become highly skilled. The analogy can be applied to incident management teams – some teams work better than others.

It is suggested that team members who feel energised about working cooperatively are more likely to feel confident whereupon integrating tasks becomes easier and that builds collective confidence. It is also proposed that when team members have a sense of inclusion and a sense of collective confidence, it is highly likely that establishing team mental models would happen more easily. As noted previously, team mental models are gained through sharing information and knowledge of the environment (Mohammed & Dumville 2001). When team members hold shared mental models they are able to communicate implicitly (Klienman & Serfaty, 1989), collectively make quick decisions (O'Neil, Chung & Brown 1997) and anticipate the actions of others (Cannon-Bowers & Salas 1998). It is also suggested that when team members belong to an incident management team that is performing well, they gain the collective identity of being part of a competent incident management team which, it can be

argued, raises their emotional significance of being identified with that particular team.

7.2.3.3 Experiencing unity

Another way in which some of the participants described a sense of collectiveness in incident management teams that are functioning well is through *'bonding'* and *'gelling'* with other team members. The following quote is from an operations officer who is talking about a major incident that he believes worked well. At this particular incident there were several fires burning and an arsonist in the area who began lighting other fires.

> We were under the hammer every day on that one...we were undertaking back burning operations that really weren't suitable to the conditions, but we had to do them...We pulled that one off with the incident management team pretty well. Some work better than others. I think it has to be the way that they [team members] function together. They [team members] might be good at what they do, but to be able to mesh together and work as a team, I think that's probably the key to it. [When this happens] it [working in an incident management team] becomes an enjoyable experience [PARKS_9].

In the above quote there is indication there is a sense of unity within the team. It is suggested that what this participant is experiencing is a sense of cohesion, as shown in Figure 7.4. Cohesion allows people to gauge the degree to which there is a sense of collectiveness in a team through the perception of individual team members' personal involvement in collective tasks and team members' closeness within the team (Heuze et al. 2006; Ahronson & Camerson 2007), as previously discussed. As a result of the unity, the team described above were able to function well and achieve the tasks that were required in order to manage the incident efficiently and effectively.

The findings of McDowell and Zhang's (2009) study suggest there is a link between team cohesiveness and good communication. Having good communication will allow incident management teams to acquire, interpret and control the flow of information so they can make sense of their environment and be prepared for any complexities and risks that might arise.

When there is a sense of cohesion amongst the team, and team members have an enjoyable experience it suggests that team members' affective needs have been met. As mentioned in Chapter 1, cohesion is 'a dynamic process that is reflected in...the satisfaction of member affective needs' (Carron et al. cited in Heuze et al. 2006, p. 59). It is also suggested that the enjoyment that the Operations Officer felt assisted in his ability to make the right decisions in terms of operational response to managing the fire. This is because 'once emotions are evoked, they direct people's behaviour and can influence people's cognitive abilities' (Reus & Liu 2004 p. 253). Furthermore, it is proposed that the Operations Officer's positive emotions may permeate throughout the team and can contribute to the team's innovation of undertaking back burning in less than favourable conditions. When emotions are shared they can have more of an influence over the group than emotions experienced by individuals (Barsade & Gibson2007).

7.2.3.4 Experiencing fluidity

When some participants talked about incident management teams working well, they used words such as *'smoothly'*, '*efficiently'*, *'flowing'* to describe the way in which the team worked together. Thus, it is suggested that what people are collectively experiencing in a team is a sense of fluidity. Moreover, it can also be argued that there is a connection between

the degree to which fluidity is experienced and collective efficacy. This is because when team members believe in their team's capabilities to achieve collective goals, they become more motivated and resilient to any difficulties that might occur, and operations will seemingly run more smoothly. According to the results of a study conducted by Tasa et al. (2006), there is a linkage between performance and what they call efficacy spirals. Efficacy spirals occur when 'groups high in collective efficacy are likely to use high quality group processes, perform well, and yield increasing collective efficacy and performance' (p. 24), as discussed in Chapter 2. As such it is proposed here that when collective efficacy is high, team members will more likely perform well and a sense of fluidity will be experienced, as shown in Figure 7.4. On the other hand, when collective efficacy is low, team members will be less motivated in their performance and the sense of fluidity will be impaired. The findings in this study support the work of Tasa et al. (2006) in illustrating that collective efficacy is important and contributes to enhanced teamwork, as indicated in the following quote.

> I think it was a level two incident within (name of district), managed out of (name of place), and that seemed to run pretty well. It was a joint incident which, I thought, for a joint incident went smoothly. We [the Incident Management Team] achieved the goals in the timeframes we set ourselves and the objectives that we set ourselves were also met. I'd have to say it was a success...resources were forthcoming and people were comfortable and confident within roles and pursuing the goals in an objective fashion. From that point of view it worked really well [DSE_09].

This quote suggests that there is heightened sense of collective efficacy amongst the team. Here the participant is talking about how he perceived the team's capability in achieving the goals in particular timeframes. As

this incident was somewhat complex and managed successfully, it indicates that the Incident Management Team worked well together in a challenging situation. This implies that the Incident Management Team was able to adapt to the changes in their tasks or goals to meet the event demands (i.e., dry grassland, and deep slope which went for about 30 or 40 metres into the forest) and people demands (e.g., farmers and working with people from different agencies) of the environment. It can also be argued that the heightened sense of collective efficacy assisted in the team's overall fluidity and effectiveness. Furthermore, it is proposed that when people feel comfortable and confident in their roles and are achieving their goals, they would be experiencing a sense of satisfaction. As a result, a heightened sense of group potency is indicated. This supports the work of Gully et al. (2002) who found there is a relationship between group potency and collective efficacy. They also found that positive group potency and collective efficacy beliefs have a positive influence on motivation and performance.

Experiencing 'flow' (Csikszentmihalyi 1992) appears to be an important aspect in managing incidents. It was shown in Chapter 5 that flow can assist in preparing to face the unknown. It was illustrated in Chapter 6 that when people are perceived to have confidence in what they do it contributes to a sense of flow in their work activities. It is proposed here that experiencing a sense of fluidity is similar to experiencing flow. When a team works together and managing the incident runs smoothly and efficiently, thus experiencing fluidity, the challenge of the incident is not left to the individual to manage. Similarly, when flow is present in teamwork, individuals' performances are connected with the team; hence, the challenge of the event brings forth a number of players and 'the

aesthetics of the whole situation can be appreciated' (Csikszentmihalyi 1992, p. 156).

7.2.3.5 Elements that connect to collective sense-making

The data in Chapter 5 illustrated the challenging situations that incident management personnel face. Throughout some of their stories were feelings of fear, pressure, vulnerability and being overstretched. A number of participants talked about the importance of gaining a sense of collective confidence in the team's capability in order to overcome such feelings and be able to work together collaboratively in a team, as indicated in the following quote.

> It is more than having confidence in the people's knowledge. It's [about] their [people's] ability to deal with the situations that will come and face them...It's about relationship abilities, problem solving and management abilities. It's people's ability to work cooperatively. Some people can get pretty agitated and angry when they're under pressure and they tend to take it out on the people closest to them, which doesn't do well for team harmony [NSWRFS_08].

The participant's story illustrates that collective confidence is experienced when team members have confidence in other members' knowledge, teamwork behaviours and problem-solving skills, and the significance they place on their team relationships to accomplish their desired outcomes. It is suggested that when team members experience collective confidence and are able to work cooperatively together to the degree to which there is a sense of fluidity then a sense of collective competence will more easily transpire. Collective competence allows people to be able to deal competently with problems and make sense of events which is enabled through sharing (e.g., knowledge and interdependency) (Boreham 2004).

As such, these elements then become part of the collective histories shared by working together and this supports the basis of the group's culture that then manifests in incident management teams.

It is shown in Figure 7.4 that when team culture is shared and interconnected with work activity (e.g., effective coordination), then the team will work more effectively. Furthermore, it is proposed that when there is a sense of enhanced collective competence, team members are more likely to have trust in each other which is an important component when working in environments of high-consequence, as previously discussed. There is also evidence that team members are displaying characteristics of psychological safety which is defined by Edmondson (1999) as 'a shared belief that the team is safe for interpersonal risk taking' (p. 354). It is also proposed that when team members are willing to help each other in their sense-making activities, they are a cohesive team.

The quote also suggests that when people feel negative emotions it can impede the way in which the team works collectively together. When this occurs it is suggested that team members may also have a perceived lowered sense of collective confidence which in turn can negatively impact on collective competence. Under these circumstances, it is proposed then that the way team members collectively make sense of their environment will also be impaired. Thus, team members will need to work harder to overcome obstacles. When collective confidence is low, team members will be less motivated in their performance to work cooperatively. As such, their collective competence has the potential to decline. As a result, team members are less likely to collectively deal with problems and make collective sense of events.

It is important to note here that other research (e.g., Levin et al. 2010) has found that negative affective experiences such as anger and frustration can negatively influence knowledge transfer which would impede collective sense-making. Making collective sense of the environment (which includes knowledge transfer and information flow) is essential in teamwork, especially for those teams that are engaged in work activity, in high-consequence environments, where high performance is required. It has been highlighted in a number of bushfire inquiries (e.g., McLennan 2005; Esplin 2003; Ellis 2004) that poor information flow, coordination and shared understanding have contributed to negative outcomes.

In summary, the participants' stories of their positive collective experiences in incident management teamwork are shaped by their shared view of their team's culture based on the norms, values and beliefs that are collectively held. The beliefs that team members hold about themselves and other team members is what team members value in being able to manage incidents effectively and efficiently. This section has shown that what team members collectively value is:

- having confidence in their team members' knowledge and abilities
- working interdependently
- team members displaying confidence
- having trust in team members
- monitoring, supporting and encouraging one another
- relationships.

7.3 Towards a sociocultural model of affect for incident management teamwork

This section will build upon the concepts discussed above and the findings of the previous chapters to highlight the importance of the interconnections between affect and culture and the roles they both play in teamwork. It is argued that many models of teamwork in the literature do not systematically examine how affect contributes to enabling and constraining teamwork.

Chapter 2 discussed two frameworks for team effectiveness: an input–process–outcomes (I-P-O) model and an input, mediator, outcomes (IMO) model. It has been argued in a number of reviews of team literature (e.g., Ilgen et al. 2005; Mathieu et a.l 2008; Antoni et al. 2009) that while the I-P-O model (see Figure 2.1 on page 60) has been useful for researchers to conceptualise and analyse team effectiveness, the model is too limited for teams that are complex, adaptive and dynamic systems (Salas et al. 2007). It is argued here that the IMO model, although it considers emergent states, overlooks the linkages between affective experiences, culture and team effectiveness.

It was discussed earlier in this chapter how team differentiation (e.g., working in silos), team fragmentation (e.g., disunity and independency and individualistic orientation) and team integration (e.g., unity, inclusion and team orientation) can lead to different outcomes of team performance (see Figure 7.1). The remainder of this chapter will discuss the mechanisms (i.e., inputs, mediating processes and outcomes) of incident management teamwork that can lead to such differing outcomes. Included in the

discussion is the way in which individual and collective affect experiences and culture interconnects with each of those elements. The chapter will conclude by presenting a sociocultural model of affect for teamwork.

Figure 7.5 illustrates that inputs drive team members' interactions that are required for team members to carry out tasks. The figure also shows that there are several layers to incident management team inputs. Incident management teams, for example, are situated within the organisational structure of fire and emergency management and those teams are comprised of individuals. Situated within mediating processes is incident management work activity that is socially constructed. The figure also shows that incident management team work activity is nested within the organisational structures and cultures of fire and emergency management.

Figure 7.5 also illustrates that outcomes are the results and by-products of the team's work activity. Outcomes then feed back into inputs thus; team effectiveness is a cyclical process.

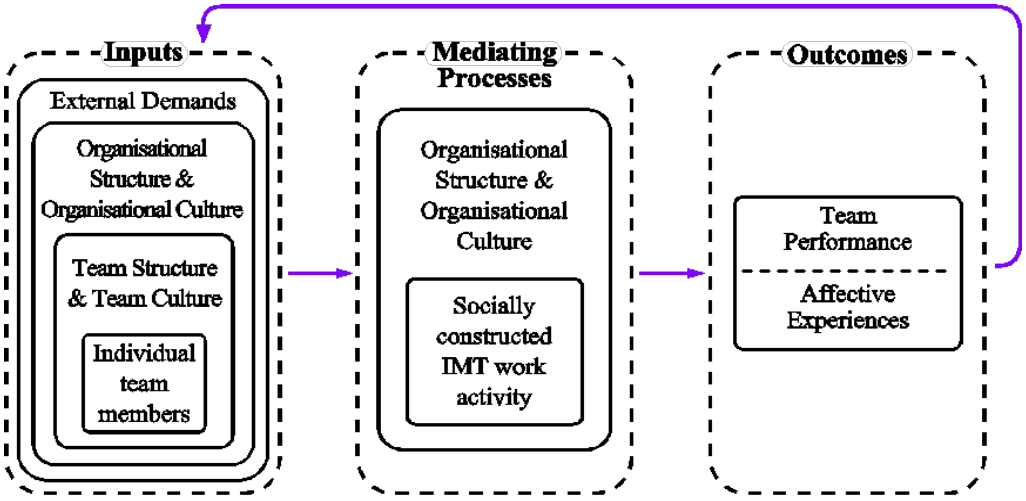


Figure 7.5 Team effectiveness framework

Figure 7.5 provides an overall view of the way in which the components of team effectiveness operate. The remainder the discussion provides a more detailed account of incident management team inputs, mediating processes and outcomes.

7.3.1 Incident management team inputs

Inputs include organisational structure, team structure, individual team members' affective experiences, event demands and people demands, as shown in Figure 7.6.

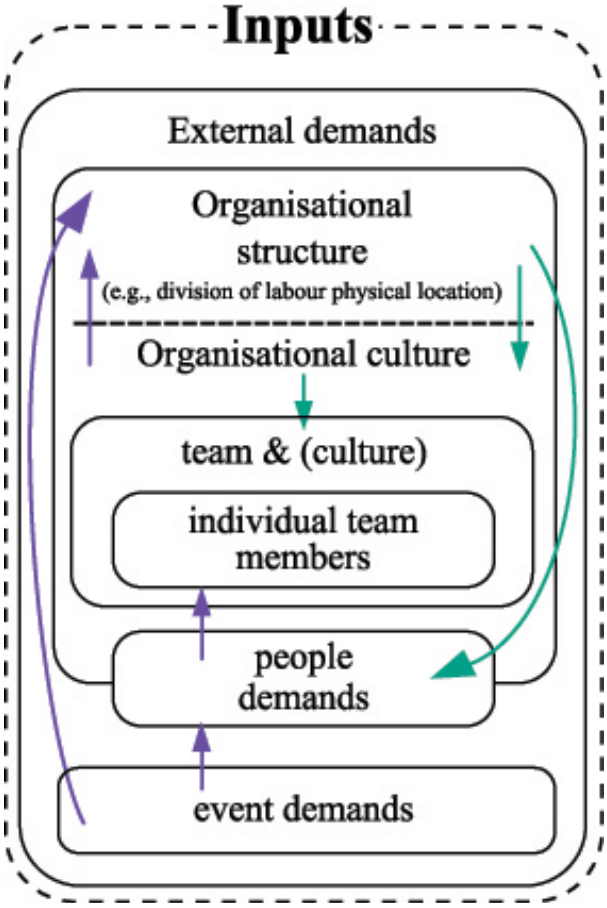


Figure 7.6 Inputs

Chapter 6 identified a number of work groups (e.g., land management agencies, fire agencies, incident management teams, urban firefighters and rural firefighters) that are part of the organisational structure of fire and emergency management.

Team inputs include the way in which the team is structured, and group norms, values and beliefs as well as the level of training for team members. It was discussed earlier in this chapter, that an incident management team's structure is comprised of functional sections (i.e., operations, planning and logistics) that have their own roles, goals, work activities and culture. It was discussed in Chapter 6 that the level of training reflects the way in which personnel carry out their work activity.

As mentioned previously, teams are made up of individuals and each individual has their own history of work experiences, affective states (e.g., moods and emotions and self-efficacy beliefs) and behaviours. The findings in chapters 5–7, for example, showed that when personnel are engaged in incident management work, they experienced both positive (e.g., calm, satisfaction and joy) and negative (e.g., frustration, fear, tense) affective experiences which, in turn, influenced the way in which work was carried out. It was illustrated earlier in this chapter that there are negative stereotypes (e.g., cowboys, shooting stars and mavericks) who are individuals who behave in ways that are not favourable with the majority of incident management personnel and as such they negatively influence the way in which work is carried out and, therefore, collective outcomes.

Event demands include the unpredictable nature of the fire, gusty winds, increasing temperature and low humidity. Steep and dense terrain can make it difficult for firefighters to access fires, and can also provide more

fuel for the fires which can make firefighting more challenging and dangerous. In Chapter 5 the lived experiences of personnel provided examples of what it can be like to attempt to manage the unknown and to be able to gain control of the unknown. Figure 7.6 illustrates that event demands influence the way in which organisational work groups are developed. With the challenges that event demands bring forth, people demands begin to form, as depicted in Figure 7.6.

Chapter 5 displayed the magnitude of the responsibilities that incident management teams carry. Such demands include the safety of firefighters and communities as well as the welfare of personnel. Political and media pressure and community expectations have also elevated demands and added to the complexities in managing incidents.

What is also of importance to include in a model of team effectiveness is organisational culture (as shown in Figure 7.6). This is because organisational culture is historically created and ever present. It was discussed in Chapter 6, that incident management is constructed of many subcultures. This is because while there are some collectively held norms, values and beliefs of incident management, there are other norms, values and beliefs that are specific to particular work groups. It is through these experiences and norms, values and beliefs that inform people how they feel about their environment, what appropriate relations with other groups are (Ott 1996) and also create both individual and collective identities. The figure also shows that organisational culture influences people demands which, in turn, can impact on individual team members.

It was discussed earlier in this chapter, and illustrated in, Figure 7.3 and Figure 7.4 that culture cannot be separated from work activity, and is

therefore ever present; thus, culture is also a mediator of team effectiveness. The next section will discuss incident management team mediating processes.

7.3.2 Incident management team mediating processes

In the team literature, processes were categorised as either taskwork or teamwork and describe the way in which inputs become outputs. As mentioned in Chapter 2, taskwork consists of the position-specific requirements of the job that individuals are required to perform in order to meet the team's task, whereas teamwork describes the interactions that team members use to coordinate their decisions and activities. Similar to Antoni and Hertel (2009), it is advocated here that taskwork and teamwork tend to merge as team members carry out their work activity to achieve collective goals. Thus, taskwork and teamwork cannot be so neatly categorised.

It was also discussed in Chapter 2 that some theorists (e.g., Marks et al. 2001; Ilgen et al.2005) distinguished between processes and mediators by advocating that processes involve members' actions, and mediators are considered cognitive, motivational and affective states, which are emergent, and as such, do not describe the nature of the action. In Figure 7.7 it is shown that processes (e.g., taskwork and teamwork) and emergent states (e.g., affective experiences) are interconnected, as depicted with interconnecting circles. This is because engagement in work activity (e.g., members' actions) is embedded within people's affective states and cannot be separated (as shown in the findings chapters). Thus, processes (e.g., teamwork and task work) and mediators (e.g., affective experiences) are interconnected.

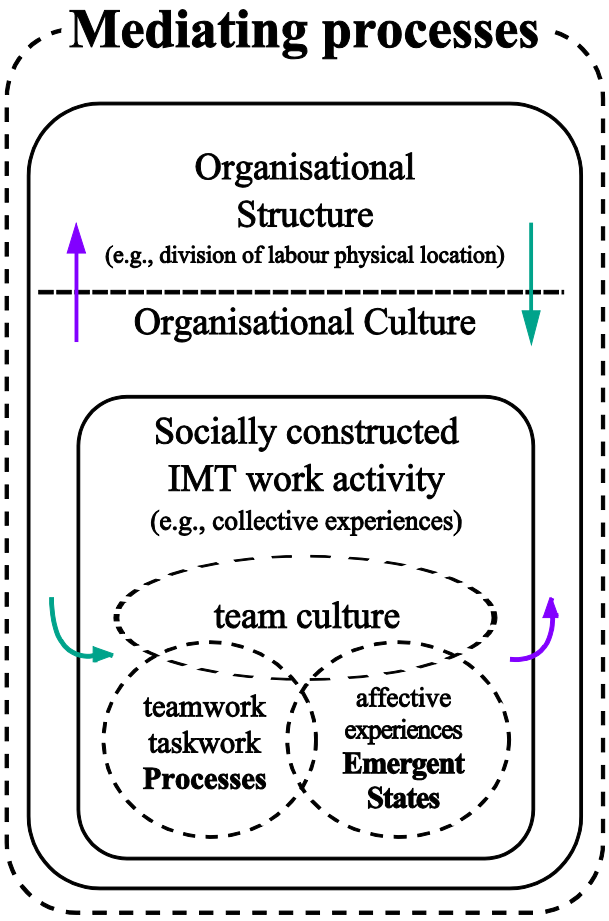


Figure 7.7 Mediating processes

Examples of mediating processes are communication within and between incident management teams and team members' affective experiences. Chapters 6 and 7, for example, discussed that sharing information and information flow within and between incident management teams is an important aspect in managing incidents effectively and efficiently. The findings in chapters 5–7 showed that the affective experiences of incident management personnel influence and are influenced by work activity and culture. It was shown in Chapter 5 that collective efficacy, for example, contributed to the resilience of the team's motivation and commitment to

task. While that is an example of how the linkages can bring forth positive experiences, it was shown in Chapter 6 that when ground crews and incident management teams did not interact to the degree that they should and did not share critical information, it created negative affective experiences (e.g., frustration, tension disempowered) and those negative feelings impacted in the team's collective performance.

It is argued throughout this thesis that work activity cannot be separated from its context (e.g., in this case the organisational context manifested in an organisation's structure) and that affective experiences influence and are influenced by the way in which team members go about their work activity, as shown with arrows in Figure 7.7. The figure also shows (with interconnecting circles) that teamwork and taskwork are connected and set up by the team's norms, values and beliefs which are manifested in the team's culture, as discussed earlier in this chapter. The broken lines with the interconnecting circles in Figure 7.7 illustrates that the elements within incident management team work activity cannot be so neatly divided. Thus, it is important to include culture in a model of team effectiveness.

7.3.3 Incident management team outcomes

As mentioned previously, outcomes are the results and by-products of the team's socially constructed work activity which may include team performance and affective needs. It is shown in Figure 7.8 that while teams with differentiation (e.g., individual histories of experiences and working in silos) can lead to satisfactory outcomes, teams can also become fragmented and integrated. As discussed, team fragmentation occurs when there is disunity amongst team members (e.g., due to different histories of experience and values and beliefs) and when team members have an

individualistic orientation. As a result, fragmented processes occur which in turn can lead to dysfunctional team performance outcomes. On the other hand, team integration occurs when is there is unity, inclusion and team orientation which, in turn, can lead to optimal team performance. Team outcomes then feed back into team inputs, as shown in Figure 7.8.

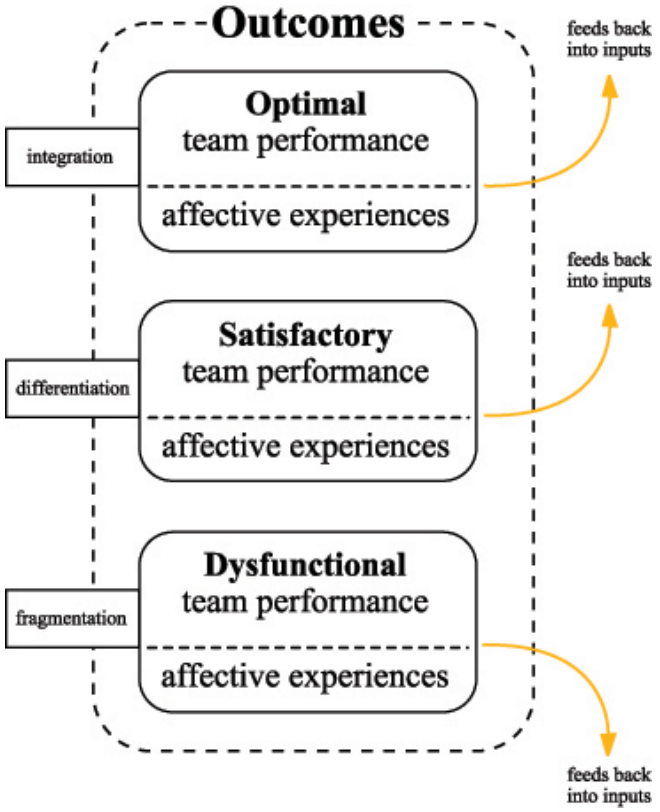


Figure 7.8 Outcomes

There has been a number of team performance outcomes presented in the data. In Chapter 5, for example, it was shown how incident management teams worked efficiently to bring an incident that was complex, problematic and out of control to being in control within three days. It was discussed earlier in this chapter how incident management teams can be innovative in the way in which they manage incidents, and accuracy and

timeliness of information sharing (or lack of) were discussed in Chapter 6. In addition, it has been argued throughout the findings within chapters that affect has an important role in incident management work activity. The degree to which team processes maintain or enhance the team's capability is also of importance; thus, team members' affective experiences are significant in terms of gauging team outcomes. The findings presented in Chapter 5, for example, illustrated that mastery experiences (which are based on performance accomplishments) assisted personnel in managing the incident at hand. It was shown that when past experiences have been repeatedly received as successes they will raise efficacy expectations (Bandura 1982). The data in Chapter 5 also illustrated the way in which team members felt they had a sense of belonging and commitment to the team which motivated them to stay on task and which led them to perceive that they dealt with the incident efficiently. Thus, team members, through their affective experiences, evaluated the efficiency of the team.

So far this section has discussed each individual component of team effectiveness. The next section will further develop a sociocultural model of affect for incident management teamwork in its entirety.

7.3.3.1 A sociocultural model of affect for incident management teamwork

It is important to recognise that there are reoccurring cycles in the mechanisms that mediate between input and outcomes because of task demands and that teams are complex and dynamic systems (Ilgen, Hollenbeck, Johnson & Jundt 2005). As such there needs to be recognition of the temporal dynamics in teamwork and that this sociocultural model is

not linear but has multiple feedback loops that are constantly interacting and mediated by individual and collective affect.

Figure 7.9 exhibits a sociocultural model of affect for incident management teams. It is shown in the figure that incident management team inputs have a number of different elements, as previously discussed. Figure 7.9 also shows the way in which each element influences and is influenced by the other with arrows. It is also illustrated in the figure that teams are made up of individuals, each with their own work experience, training and efficacy beliefs, for example. Once people become part of a team they are no longer working on their own; they work interdependently with other team members and evolve from individual to collective (as depicted in Figure 7.9 with circular lines). It is also important to recognise that team members not only work interdependently, their emotions are also transferred, shared and felt collectively within the Incident Management Team, as discussed in the previous chapters.

The figure also shows that the way in which incident management teams carry out their work activity is based around team differentiation, fragmentation and integration. It is argued throughout this thesis that work activity cannot be separated from work contexts (e.g., in this case the organisational context manifested in an organisation's structure and culture) and that collective affective experiences are influenced by the way in which team members go about their work activity. It has been discussed that while teams with differentiation (e.g., individual experiences and efficacy beliefs) might have some limitations, by and large differentiation amongst incident management teams does not impede teamwork to any great extent. This is because team members work cooperatively together to

achieve the desired outcomes. Thus overall, teams can work to a satisfactory level, as illustrated in Figure 7.9.

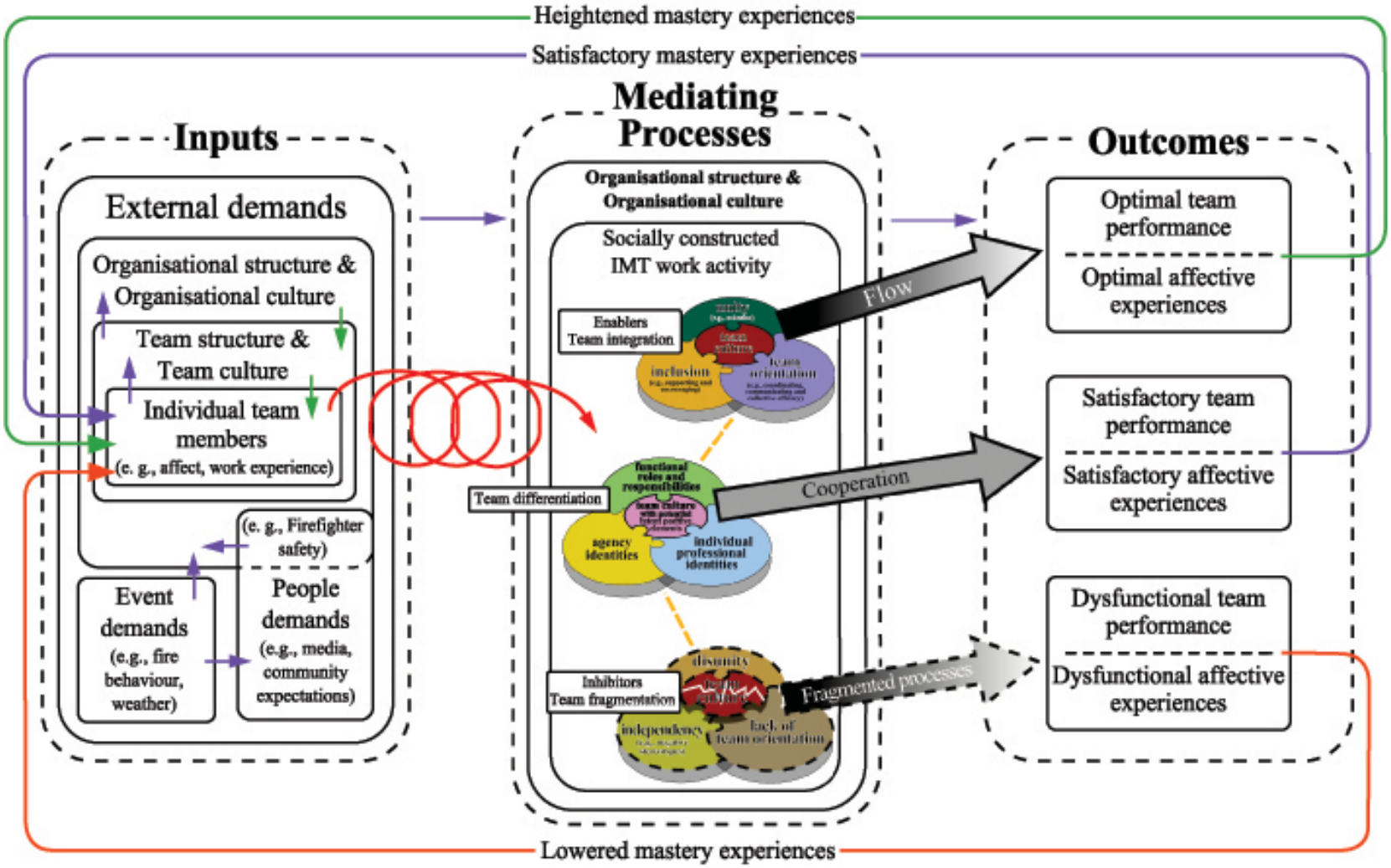


Figure 7.9 Sociocultural model

It was noted earlier in this chapter, however, that teams (and their differentiation) can also exhibit team fragmentation when there is conflict, disunity and individualistic orientation. Moreover, team fragmentation facilitates a number of mediating processes that are inhibitors (e.g., disconnect in teamwork and negative collective affective experiences) to incident management teamwork activity. As such, it is highly likely that these teams experience fragmented processes which in turn can lead to dysfunctional performance outcomes, as shown in Figure 7.9.

In contrast to incident management teams that experience team fragmentation, it is shown in Figure 7.9 that when incident management teams experience team integration (e.g., team orientation, unity and inclusion), there are a number of mediating processes that are enablers (e.g., coordinating and communicating; collective positive emotions and collective efficacy) which interconnect. When this occurs, team members experience a sense flow (e.g., flow), which in turn, can assist teams in reaching optimal outcomes.

It is also shown in Figure 7.9 that team outcomes then become inputs. This is because the way in which incident management teams perform (or are perceived to perform) influences people's demands (e.g., community expectations and perceptions), organisational structure (e.g., work groups) and culture, and team structure and culture.

It is also shown in the Figure 7.9 that team outcomes become mastery experiences (Bandura 1977) for individual team members, and therefore teams. Thus, it is important for teams to experience team integration and a heightened sense of mastery, rather than not reaching their full potential and remaining at a satisfactory level or at worst experiencing team fragmentation and a lowered sense of mastery.

7.4 Chapter summary

This chapter addressed the research question: How can the role of individual and collective affect be conceptualised? What are the ways in which affect intersects with sociocultural contexts to influence incident management team performance? This chapter has developed conceptual models of teamwork to account for the way in which team members developed their collective experiences and the ways in which affect can lead to positive and negative outcomes of team performance.

It was discussed in this chapter that all teams are differentiated by virtue of the different individuals who make up the team. This is because teams are made up of individuals with differing attributes and efficacy beliefs. In incident management teams there were also functional differences with control, planning, operations and logistics having their own roles and responsibilities. Some teams do not progress in their teamwork (e.g., limitations with information sharing) and while this does not impede teamwork to any great extent, overall such teams (and their differentiation) never reach beyond a satisfactory performance level, as illustrated in Figure 7.1. Some of the ways in which team fragmentation can occur in incident management was also discussed (and illustrated in figure 7.3 in this chapter).

For example, when team members experienced disunity amongst the team it negatively changed the dynamics of team. It was identified in the interviews there were three individual negative stereotypes (i.e., cowboys who are self-interested, shooting stars who are unable to manage adrenalin and mavericks who are egotistical) in incident management. As such, these negative stereotypes did not value team orientation and relationships with other team members. Hence, they did not share the same norms, values and beliefs that other team members collectively held. Moreover, negative stereotypes worked in such a way that they undermined

the team effort. As a result, fragmented team processes occurred and impaired collective sense-making (as shown in Figure 7.3), which in turn can lead to dysfunctional team performance, as shown in Figure 7.1.

While there is differentiation (e.g., differing roles) amongst teams, it was shown in this chapter that it is also possible for team members to create integration. This is fostered through individuals focusing on a team orientation rather than an individualistic orientation overcoming social and structural identity barriers and creating unity and integration. It was proposed that when such elements interconnect, team members experience a sense of fluidity amongst the team which can assist team members to collectively make sense of the events, as illustrated in figure 7.4. As such, team integration enables the team to realise their potential and move beyond working in silos, for example, to obtain optimal team performance, as illustrated in Figure 7.1.

The chapter concluded by presenting a sociocultural model of affect for incident management teamwork (see Figure 7.9). It was highlighted in the model that sociocultural aspects that are integral to affect and have important roles in teamwork.

8

CHAPTER EIGHT

CONCLUSIONS, IMPLICATIONS AND FUTURE WORK

8.1 Introduction

There were three main aims of this thesis. The first aim was to explore the role of affect in fire incident management, and to examine the ways in which affect influences individual and collective performance. The second aim was to better understand incident management team members' collective affective experiences whilst engaged in incident management teamwork. The third aim was to develop a model for teamwork that extends recent models to incorporate relationships between affect and culture and the roles they both have in teamwork.

In Chapter 1, it was argued that people's affective experiences and work activity are important for a number of reasons. The role of affect, for example, is a key element in influencing people's effectiveness at problem solving and decision making, and a number of other performance relevance outcomes (Isen 2001). In addition, work intensification (Green 2001) has become prevalent in a number of organisations. The role of affect, then, is possibly nowhere more important than in high-consequence environments where practitioners are faced with time-critical and complex environments.

This chapter:

- synthesises the findings presented in the thesis to review the ways in which affective experiences influence and are influenced by work activity and the way in which cultures enable and inhibit affect and therefore incident management teamwork.
- discusses the implications of these findings for practitioners, trainers, leaders, professional developers and policy makers
- suggests direction for further research.

8.2 Synthesis of findings

In Australia, fire and emergency management is becoming increasingly important as the impact of climate change provides more fuel for fires, as mentioned in Chapters 1 and 4. Fire is an inherent part of the Australian landscape. On the one hand, fire is needed, at times, to assist in various ecologies and, on the other hand, fire (e.g., the Black Saturday fires) also has devastating effects on the environment. In order to assist in managing bushfires seamlessly, a unified management structure (i.e., AIIMS) has been adopted. Central to the management structure are incident management teams. Thus, the first research question addressed in Chapter 5 was *what are the lived experiences of people who work in incident management teams?*

Chapter 5 showed that the environment in which incident management personnel work is ever changing and dynamic. This is because the nature of fires is unpredictable, which can be due to gusty winds, increasing temperatures and low humidity. In addition, steep and dense terrain can make it difficult for resources (e.g., firefighters and fire trucks) to access fires and can also provide more fuel for the fires. As such, incident management personnel constantly have to deal

with unforseen emergent issues which, at times, place increased pressure on them.

The findings in Chapter 5 also showed there were times when personnel needed to work long hours due to the nature and magnitude of fires and this affected some team members' sleep. Incident management work can be cognitively demanding where personnel need to consider multiple issues simultaneously. In addition, personnel work under compressed timeframes. How, then, do incident management personnel deal with such complexities?

It was illustrated in Chapter 5 that when engaged in work activity, personnel drew on their experiences and training and focused on the task at hand in order to prepare for the unknown. When personnel have been successful in previous operations, it is highly likely that they gain a sense of increased self-efficacy. When this occurs, personnel have expectations that they are able to deal proficiently with the incident at hand. This finding is supported in self-efficacy literature: where people are successful, they develop confidence by focusing on the task and generalising from previous experiences (Tams 2008) and such self-efficacy beliefs may provide a coping mechanism to deal with the effects of a demanding environment (Williams et al. 2010).

It was also discussed in Chapter 5 how some personnel gained self-efficacy through vicarious experiences. This occurred when personnel observed controllers (i.e., deputy incident controller and incident controller) and other team members who they believed were performing well and had self-confidence, which is congruent with social cognitive theory (Bandura 1986). It was also shown in that chapter that when incident management personnel had raised efficacy beliefs, it provided a feeling of being confident and in control, which in turn enabled a sense of empowerment.

It is argued in this thesis that a team member's emotional energy is contagious within teams (Barsade 2000). Chapter 5 illustrated how the team's collective high emotional energy and their collective sense of identity generated the team to seek to achieve the desired outcomes. Essentially, when incident management personnel experienced positive affect and felt good about themselves and what they did, it assisted in motivating the team members to stay on task and overcome obstacles.

The way in which people perceive their sense of self is socially constructed. According to Brown (1998), how people feel about themselves is informed by the individual's perception of how others perceive them. Although individuals have some control over how they would like others to perceive them, one cannot ensure the interpretation is correct or know with certainty how one might be reinterpreted (Goffman 1959). Chapter 5 demonstrated not only how personnel within incident management influenced the way in which individuals perceived their sense of self, it also showed how elements external to incident management such as pressure from the media and community expectations also influenced the perception of one's sense of self. There were times when personnel, in particular incident controllers, felt good about the work they had accomplished and were confident in the decisions they had made, yet they also felt vulnerable and stressed which, it could be argued, contributed to a lowered sense of self. This occurred when incident management personnel perceived that their social identity had changed (e.g., letting the community down rather than supporting the community). Thus, an example was provided of how tensions within the self can reside (Markus & Nurius 1986). Such negative affect, if continuously experienced, has the potential to be detrimental to one's wellbeing and performance.

In Chapter 5, and indeed throughout this thesis, it has been shown that when people are engaged in incident management work they experienced both positive (e.g., heightened self-efficacy and satisfaction) and negative affect (e.g., tension and frustration) which in turn influenced their performance. In relation to such experiences Chapter 5 focused upon the linkages between work and people demands, individual affect and performance.

Chapter 6 examined the linkages between cultural elements, affect and performance. Thus, Chapter 6 addressed the second research question: *What cultures can be identified within incident management work groups?* and the third research question: *What affective experiences are influenced by those organisational cultures?*

It was highlighted in Chapter 6 that incident management culture is constructed of many subcultures. So while there were some collectively held norms, values and beliefs of incident management, there were other norms, values and beliefs that were specific to particular work groups. The cultural similarities and differences that were experienced by a number of work groups were emotionally charged which also influenced the way in which work was carried out.

It was found in Chapter 6 that while each agency within incident management shared a common goal of managing incidents effectively and efficiently, there were divisions between agencies that can be ascribed to each organisation's structural goals and cultures which have built up around the work personnel do, thus creating 'in-groups' and 'out-groups'. Fire agencies, for example, focus on fire suppression whereas land management agencies focus on fire ecology and living with fire. Participants indicated this division at times caused *'tension'* and *'frustration'* between groups and influenced the way in which their collective work activity was carried out.

Functional distinctions (i.e., the way in which groups are defined by the kind of work they do) and geographical location also created cultural difference within incident management. The findings in Chapter 6 revealed how information sharing between work groups, at times, was somewhat limited. As a result, barriers were generated between the work groups and incident management became less seamless which, in turn, impacted on team members' work performance. It was noted in Chapter 6 that the cultural distinctions between in-groups and out-groups might have a role in who shares information with whom (i.e., keeping information within the in-group rather than sharing with people in the out-group).

Chapter 6 also illustrated that the way in which urban firefighters and rural firefighters carried out their operational tactics can at times be different from each other. Urban firefighters work in organisations that are arguably highly regimented and are familiar with a more organisational structured approach adhering to processes and procedures. On the other hand, the majority of rural firefighters' work is undertaken by volunteer firefighters who come from a range of working backgrounds. They also have a self interest in protecting their own, and others' assets. It was shown in Chapter 6 that such actions can be perceived by some of their urban counterparts as unfavourable. In addition, there was also evidence that the division between urban firefighters and rural firefighters is based on perceptions of valuing different forms of expertise. It appeared that having such beliefs influenced some urban firefighters' attitudes towards their counterparts (rural firefighters) and the types of tasks they wanted to undertake (i.e., leaving the so called 'dirty work').

Chapter 6 also discussed how the beliefs that people hold about themselves and others is what people valued in incident management because it assisted in

managing incidents effectively. It was shown that when there was a shared history of experience, for example, group members were able to establish a number of elements (e.g., how people might express emotion and control emotion) about others in their group. In doing so, group members were able to determine the degree to which they had confidence and trust in others. It was also shown that having trust in others influenced collective efficacy beliefs which, in turn, assisted in managing incidents effectively.

The findings also revealed that people who have confidence in what they do contributed to the sense of 'flow'(Csikszentmihalyi 1992) within their group, thus suggesting, there is a linkage between a sense of confidence and flow. Moreover, when personnel experienced flow, there was a sense of excitement and joy. It was concluded that when such positive experiences occur and people have a shared cultural understanding in what they value, the differing groups work seamlessly together in effectively managing incidents.

While Chapter 6 discussed some of the cultural elements of a number of groups in fire and emergency management, Chapter 7 focused on one particular subgroup which is central to managing incidents; that is, incident management teams. Chapter 7 addressed the fourth research question: *How can the role of individual and collective affect be conceptualised?* and a fifth research question: *What are the ways in which affect intersects with sociocultural contexts to influence incident management team performance?* It was shown in Chapter 7 through conceptual models of teamwork (team differentiation, team fragmentation and team integration), that historical developments of cultural elements can influence collective experiences, which in turn, can influence affect to lead to positive or negative outcomes of team performance. Incident management teams, for example, consist of individuals with their own efficacy

beliefs and histories of experiences of working in different organisations (often with different values and objectives) and are characterised by functional sections (i.e., control, planning, operations and logistics) that also have their own roles, goals and objectives. While at times there were limitations with working in silos, for example, by and large, team differentiation does not impede teamwork to any great extent; thus, overall teams can work to a satisfactory performance level. However, the findings also showed that teams can, at times, have fragmentation which occurs when there are differing values and beliefs. As a result, team orientation is diminished and an individualistic orientation transpires.

In addition, the findings in Chapter 7 showed that fragmentation can occur in teams when there was disunity and negative stereotypes indicated by people who work independently. The cultural labels given by a number of participants in some organisations to such negative stereotypes in incident management were '*cowboys*', '*shooting stars*' and '*mavericks*'. The findings revealed that firefighters who did not follow formal instructions were identified as '*cowboys*. Less experienced firefighters who behaved in an erratic manner (and perhaps not managing adrenalin) were identified as '*shooting star'* and incident management team members who worked independently without adhering to structure and lacked collective orientation were identified as '*mavericks*'. It was concluded in Chapter 7 that such negative stereotypes with their individualistic behaviours fragment teamwork and team effort.

While differentiation within groups always exists, it is also possible for teams to experience integration when the team's norms, values and beliefs are collectively held. The findings in Chapter 7 showed that when values are shared by team members, they are more likely to experience a sense of collective confidence that connects to team orientation. As a result, team members experienced synergy

within the team which can lead to ‘adaptive coordinated action’ (Salas et al. 2007) and a heightened sense of collective efficacy (Gully et al. 2002). It was contended in that chapter that the synergy amongst the team contributed to the way in which the team’s sense of collective competence was experienced. It was also found that individuals’ affective experiences (e.g., confidence and satisfaction) filtered through the team and enhanced the team’s work activity.

The findings also showed that experiencing inclusion was important. As team members work in high-consequence environments, where they are subjected to cognitive overload and emotional exhaustion, it was important for team members to feel they belonged to a team where members were supported and encouraged to achieve their collective goals. It was proposed in Chapter 7 that experiencing inclusion by encouraging and supporting each other would more easily lead to shared mental models. When team members hold shared mental models, it can enable team members to communicate implicitly (Klienman & Serfaty 1989), collectively make quick decisions (O’Neil et al. 1997) and anticipate the actions of others (Cannon-Bowers & Salas 1998).

Another way in which incident management team members became an integrated team was through experiencing unity. It was shown in Chapter 7 that there were linkages between affective experiences (e.g., cohesion and satisfaction) and cognition (e.g., decision making). This finding is supported in the emotions literature where it is claimed that people’s emotions and cognitive abilities cannot be separated (e.g., Reus & Liu 2004; Roth 2004). It was also shown that collective positive emotions contributed to team innovation. This was because shared emotions have been found in some studies to have more of an influence over the group than individual emotions (e.g., Barsade & Gibson 2007). It was also noted in Chapter 7 that cohesion can contribute to good communication

(McDowell & Zhang 2009) which is important in incident management teams because accurate and timely information is a key element in collectively make sense of the complex and unpredictable environment in which team members work.

It was suggested in Chapter 7 that when incident management teams were working well and experiencing team orientation, inclusion and unity a sense of fluidity manifested within the team. Participants described such collective experiences as *'smoothly'*, *'efficiently'* and *'flowing'*. It was contended in Chapter 7 that there is a connection between the degree to which fluidity is experienced and collective efficacy. As the teams' perceived capabilities increased to achieve collective goals, they became more motivated and resilient to any difficulties that transpired, thus the operations seemingly ran more smoothly. This finding is supported in the collective efficacy literature (e.g., Tasa 2006) because there is a linkage between performance and efficacy spirals.

It was shown in chapters 5 and 6 that experiencing 'flow' (Csikszentmihalyi 1992) was an important aspect in managing incidents because flow assisted personnel in preparing to face the unknown, and when people were perceived to have confidence in their tasks it contributed to a sense of flow in their work activities. It was proposed in Chapter 7 that experiencing a sense of fluidity is similar to experiencing flow in teamwork because both concepts require individuals' performances to be connected to the team and when this transpires the interactions are experienced effortlessly.

It was also suggested in Chapter 7 that when team members experience team integration to the degree to which there is a sense of fluidity, then this may facilitate a sense of collective competence which can assist team members to collectively make sense of their environment (Boreham 2004). It was also

proposed that the linkages between enhanced collective competence and trust in each other can lead team members to experience 'psychological safety' (Edmondson 1999).

Chapter 7 also discussed the way in which mechanisms (i.e., inputs, mediating processes and outcomes) of incident management teamwork can lead to different team outcomes. Included in the discussion was the way in which individual and collective affective experiences and culture interconnect with each of those mechanisms. The chapter concluded by presenting a sociocultural model of affect for teamwork. It was shown in the model that organisational (and team) culture is ever present and is both a driver and mediator of teamwork, and therefore, team effectiveness. The sociocultural model also highlighted the importance of the interconnections between affect and culture and the way in which they both contribute to enabling and constraining teamwork.

8.3 Implications of findings for practitioners, leaders, trainers, professional developers and policy makers

The outline above has synthesised the main findings presented in chapters 5–7. What are the implications of these findings for practitioners, leaders, trainers, professional developers and policy makers who are interested in the possibilities of enhancing people's collective experiences in incident management?

This section discusses the implications of:

- in-groups and out-groups and their impacts in terms of affect
- fragmentation and its impact on affect and teamwork
- safety culture and its influence on collective affective experiences
- perceived differences of training and its impact on affect
- the impacts of incident management on wellbeing.

The chapter concludes by suggesting direction for further research.

8.3.1 In-groups and out-groups and their impacts in terms of affect

It was discussed in Chapter 6 that many participants described divisions of different fire and emergency services groups. When people identify in-groups and out-groups in culture, it provides insights into understanding what is happening within, and between, those groups. It was shown in that chapter that the power struggles (e.g., issue of ownership – 'turf wars'– whose fire is it?) can cause tension and division amongst work groups. When such powers struggles occurred disconnects and breakdowns were evident and fragmentation of coordinated effort appeared. This, in part, is because of being internally orientated which can lead to focus on self and one's own group.

Leaders (and other personnel) need to be able to recognise when in-groups and out-groups are at play and to consider the implications on a diminished focus on collective efficacy, so they are able to create opportunities to minimise negative spirals and integrate teams. It is important to be able to recognise that each agency has its different purposes, values and beliefs. Hence, there is a need to develop strategies to enhance mutual respect of each agencies' (and work groups') strengths and develop leaders' (i.e., incident controllers and all functional unit leaders) self-awareness so they are able to see beyond the 'turf wars' and recognise the powerful role they play in leadership modelling (i.e., vicarious experiences Bandura 1982, 1986), as evident in Chapter 5.

There is a possibility that such division between in-groups and out-groups also has implications for individuals to feel disempowered, as discussed in Chapter 6. Since empowerment is a process by which people learn to achieve goals (Mechanic 1991) and gain a sense of mastery over situations (Rappaport 1987), it

can be concluded that feeling disempowered can contribute to lowering individual and collective efficacy beliefs which, in turn, can influence group performance. As discussed previously, efficacy beliefs are informed by previous and present experiences. If people are to gain a heightened sense of collective efficacy it is important to be able to draw on elements (e.g., mastery and vicarious experiences, team orientation, positive affect) that are interconnected with positive experiences.

8.3.2 Fragmentation and its impact on teamwork and affect

There were negative stereotypes discussed in Chapter 7 who were behaving in an erratic manner which can potentially be dangerous when working in high-consequence environments. Such behaviours can have less than optimal results which can lead to individualistic behaviour and fragmentation of team effort. It is important to recognise the way in which cognitive-based biases such stereotypes can colour one's perception of trustworthiness cues in others (Hughes et al. 2011).

It was concluded in chapters 6 and 7 that incident management personnel value the importance of having confidence and trust in other members and for team members to have a collective orientation towards the team. This, in part, is established through the perceived ability of others, in terms of their 'skills, competencies and characteristics related to the specific situation' (Hughes et al. 2011, p. 129) and, in part, through collective expectations (i.e., norms) of how team members should behave. It was also noted in Chapter 6 that what team members value is people who are able to manage emotions so that those emotion do not influence decision making. Personnel who have a level of composure and level-headedness, for example, are valued because they are able to read the situation, gain an understanding of what needs to be done and be confident in

their decision making. Thus, people who behave in an erratic manner (such as the negative stereotypes that were discussed in Chapter 7) are not behaving in a manner that supports a collective orientation. It is important, therefore, for all team members and, in particular, incident controllers and all functional unit leaders to be able to recognise the early signs of fragmentation (e.g., behaviour of negative stereotypes) and to overcome barriers through differentiation and re-mediate the group in a positive direction in order to achieve the best collective outcomes. It is also important that leaders receive professional development to equip them with leadership skills that will assist them in managing difficult people (i.e., people who put self-interest ahead of team interest and/or people who cannot help being manipulative because of their egotistical characteristics). It would also be valuable for all personnel to better understand themselves in terms of self-awareness and self-regulation and to learn productive ways of expressing negative emotions that could be directed at enhancing team outcomes. It is important, therefore, for all individuals to have professional development in emotional intelligence. When people are skilled in emotional intelligence they are able to identify emotions in themselves and others; use emotion to facilitate thought; understand the complexities of emotion and shifts in emotion; and manage emotion in themselves and in others (Kerr, Garvin, Heaton & Boyle 2006).

8.3.3 Safety culture and its impact on collective affective experiences

Incident management teams rely on team members to continually develop and promote a shared understanding of the situation and problems that arise, and what resources (including members' capabilities) might be called upon to ensure safe performance. A safety culture is the product of shared values and beliefs that

determine the degree to which all members direct their effort to the attention and actions towards minimising harm towards self and others. A safety culture relies heavily on successful information flow, shared attitudes and collective behaviours (Vogus & Sutcliffe 2007). This reiterates the importance of team members, and in particular, leaders to be able to manage people who behave in an erratic (and even dangerous) manner and, therefore, lack team orientation and collectively held norms, values and beliefs (e.g., negative stereotypes). As discussed in Chapter 6, trust is regarded as important in managing incidents, and is related and set up by collectively held values within the group.

The benefits of safety organising can be intensified when integrated with trusted leadership (Vogus & Sutcliffe 2006). It is therefore vital that incident management team members have trust in their leaders and each other. What is also important is that leaders and team members earn that trust. This can be gained, in part, through leaders interacting with team members and showing concern about how team members are coping with the demands of their work. This is supported in leadership literature where close relationships with team members are 'sustained by mutual trust and openness' (House & Shamir cited in Zohar & Tenne-Gazit 2008 p. 745). Trust can also be gained through leadership modelling (vicarious experience) whereby team members observe leaders adhering to all the elements that are associated with a safety culture. There are also implications for psychological safety because psychological safety is gained through trust and an open climate. Psychological safety can benefit the team by learning through mistakes (Edmondson 1999). Moreover, being able to talk about mistakes and learning from those mistakes will also enhance self-efficacy and collective efficacy beliefs (Bandura 1977).

Leaders who create an open climate for their team, particularly during critical moments, can contribute to team members developing and refining their knowledge, skills, attitudes and expectations as well as making sense of their environment (Blatt et al. 2006). It is concluded that such leaders would also contribute to fostering team members' collective experiences, thus strengthening cultural integration. What is also of importance, however, is for leaders to be mindful that too much cohesion, inclusiveness and collective confidence can lead to 'group think' where team members will not look out for changes in demands or be flexible in their thinking to consider alternative strategies to meet the changing demands. Thus, poor decisions may be made. It is suggested that while technical competencies are important for leaders, it is also essential for them to obtain quality leadership skills. Thus, leadership training should give equal importance to both technical and non-technical leadership skills that will enhance team members' affective followership experiences.

8.3.4 Perceived differences on training and its impact on affect

Incident management is frequently constructed of different agencies and work groups working together. Such differences have implications for inter-agency and inter-group working relationships, particularly in high risk settings and multi-disciplinary team environments. It was shown in Chapter 6, for example, that the perceived difference in firefighters' training has contributed to a division between career firefighters and volunteer firefighters. Such inequalities also have implications for individual and collective competence, and therefore collective sense-making (Boreham 2004). Individual and collective capabilities in terms of efficacy beliefs (Bandura 2000) and a sense of self are also affected. The way in which people perceive their sense of self impacts on the way people cope with adverse conditions (Brown 1998). Given that fire and emergency personnel work

in high-risk settings, it is important to support their wellbeing in whatever ways are possible. Thus, such perceptions about inadequate training need to be further investigated and either discredited or exposed.

8.3.5 The impacts of incident management on wellbeing

In Chapter 5, and indeed throughout this thesis, there has been discussion around the demands that incident management personnel face when working in such complex and unpredictable environments where there is high risk. Working long hours and personnel finding it difficult to switch off at the end of the day in order to get quality sleep appear to be an issue. The way in which personnel need to juggle priorities and in some cases have trade-offs between their wellbeing and meeting the demands of the environment is also an issue. Being over engaged in work activity to meet the demands of a high-consequence environment can lead to fatigue, stress and burnout which create risk management issues. Thus, there are times when team members are put in a bind to manage under different circumstances without good outcomes much less an optimal one, and this impacts on their emotional wellbeing. In order to build up personal and collective resilience under such adverse conditions, there is a need for professional development and learning activities to take into account emotional, physical and cultural elements that can impact on one's wellbeing. Not only is it is important to better understand the impacts of such emotional hardship when working in high-consequence environments, there is also a need for what is the nature of cultural change.

In the industry, there is also a sense of still being emotionally damaged from the effects of the Black Saturday fires, whether personnel were directly or indirectly involved in managing the fires on that day. As such, there needs to be better mechanisms to enable people to reflect, adjust, reconcile and realign their

identities as there is some evidence to suggest that some firefighters have emotional fatigue. Thus, when undertaking fatigue management studies, it important to ensure that attention is given to emotional elements as well as physical aspects.

In fire and emergency services, increased attention has been given to human factors in terms of individual and team decision making. It is important in professional development programs that suitable attention is given to the role of affect on individual and collective decision making. It is also important that individuals, as well as leaders (including incident controllers and functional unit leaders) in incident management team contexts be trained to recognise indicators of stress and burnout, and be given strategies that will enable them to be manage stress so that stress levels will not increase to a point where they impact on team member performance and wellbeing.

8.4 Future research

While these findings are based on a qualitative study of one type of work activity, which is fire and emergency management teamwork, and thus generalisations are constrained, it is contended that these findings could plausibly relate to work activity in other high-consequence work environments. Their relevance, therefore, could be tested in other environments where work activity involves high-reliability and high-performance work.

What are the implications of this study for teamwork and team effectiveness? It is important to recognise that sociocultural elements are integral in teamwork. This is because organisational and team culture is ever present as drivers and mediators of team effectiveness. It is also important to recognise that in complex and dynamic systems such as teams, teamwork is not linear but has multiple

feedback loops that are constantly interacting and mediated by individual and collective affect. It is therefore important for researchers when evaluating teamwork, regardless of whether their approach is developmental or episodic, to consider sociocultural elements.

What are the implications of this study for stress and wellbeing in this type of high-consequence work activity? It is important to look at different avenues when researching people's wellbeing and work-life balance given that the cost to the community is continuing to increase with direct (e.g., sick leave) and indirect effects (e.g., stress, accidents and poorer decision making) causing a loss of productivity. It is also important to recognise the role of positive affective experiences in supporting individuals and people in groups, especially in high-consequence environments where people need to build resilience to the cognitive, physical and emotional demands of the environment in which they work.

References

Aasa, U., Brulin, C., Ängquist, K. A., & Barnekow-Bergkvist, M., (2005). Work-related psychosocial factors, worry about work conditions and health complaints among female and male ambulance personnel. *Scandinavian Journal of Caring Sciences, 19*(3), 251-258.

AFAC. (2005). The Australasian inter-service incident management system: a management system for any emergency. Melbourne: Australasian Fire Authorities Council.

Ahronson, A., & Cameron, J. E., (2007). The nature and consequences of group cohesion in a military sample. *Military Psychology, 19*(1), 9-25.

Alexander, D. A., & Klein, S., (2001). Ambulance personnel and critical incidents: Impact of accident and emergency work on mental health and emotional well-being. *British Journal of Psychiatry, 178*(JAN.), 76-81. doi: 10.1192/bjp.178.1.76

Alvesson, M. (2002). *Understanding organizational culture*. London: Sage.

Antoni, C., & Hertel, G., (2009). Team processes, their antecedents and consequences: Implications for different types of teamwork. *European Journal of Work and Organizational Psychology, 18*(3), 253-266.

Ashforth, B., & Humphrey, R., (1995). Emotions in the workplace:A reappraisal. *Human Relations, 48*(2), 97-125. doi: 10.1177/001872679504800201

Augoustinos, M., Walker, I., & Donaghue, N., (2006). *Social cognition: An integrated introduction* (2nd ed.). London: Sage

Baker, D. P., Day, R., & Salas, E., (2006). Teamwork as an essential component of high-reliability organizations. *Health Research and Educational Trust, 41*(4), 1475-6773.

Bakhtin, M., (1990). *Art and answerability: early philosophical essays*. Austin: University of Texas Press.

Bandura, A., (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psycholgical Review, 84*, 191-215.

Bandura, A., (1982). Self-efficacy mechanism in human agency. *American Psycologist, 37*(2), 122-147.

Bandura, A., (1986). *Social foundation of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.

Bandura, A., (1989). Perceived efficacy in the exercise of personal agency. *The Psychologist*, 411-421.

Bandura, A., (1997). *Self-efficacy: the exercise of control*. New York: W.H.Freeman and Company.

Bandura, A., (2000). Exercise of human agency through collective efficacy. *Current Directions in Psychological Science, 9*, 75-78.

Bandura, A. (2006). Toward a psychology of human agency. *Perspectives on psychological science, 1*(2), 164-180.

Barnes, J. (1997). *Who should know what?* : Penguin.

Barsade, S. G. (2002). The ripple effect: Emotional contagion and its influence on group behavior. *Administrative Science Quarterly, 47*, 644-675.

Barsade, S. G., & Gibson, D. E. (2007). Why does affect matter in organizations? *Academy of Management Perspectives, 21*(1), 36-59.

Bass, B. M., Avolio, B. J., Jung, D. I., & Berson, Y. (2003). Predicting unit performance by assessing transformational and transactional leadership. *Journal of Applied Psychology, 88*(2), 207-218.

Berryman, S. (1993). Learning for the workplace. In L. Darling-Hammond (Ed.), *Review of Research in Education* (Vol. 19). Washington: AERA.

Beyerlein, M., Johnson, D., & Beyerlein, S. (Eds.). (1997). *Advances in interdisciplinary studies of work teams* (Vol. 4). London.: JAI Press Inc.

Blatt, R., Christianson, M. K., Sutcliffe, K. M., & Rosenthal, M. M. (2006). A sensemaking lens on reliability. *Journal of Organizational Behaviour, 27*, 897-917.

Blunsdon, B., Reed, K., & McNeil, N. (2005). Social innovators or lagging behind: Factors that influence managers' time use. *Women in Management Review, 20*(8), 544-561. doi: 10.1108/09649420510635196

Bolger, N. (1990). Coping as a Personality Process: A Prospective Study. *Journal of Personality and Social Psychology, 59*(3), 525-525.

Boreham, N. (2004a). *Collective competence and work process knowledge*. Paper presented at the Symposium on work process knowledge in European vocational education and training research, Crete, Greece.

Boreham, N. (2004b). A theory of collective competence: challenging the neo-liberal individualisation of performance at work. *British Journal of Educational Studies, 52*(1), 5-17.

Borgogni, L., Petitta, L., & Mastrorilli, A. (2010). Correlates of Collective Efficacy in the Italian Air Force. *Applied Psychology, 59*(3), 515-537. doi: 10.1111/j.1464-0597.2009.00410.x

Briner, R. B. (2005). What can research into emotion at work tell us about researching well-being at work? *Int. J. Work Organisation and Emotion, 1*(1), 67-73.

Brotheridge, C. M., & Grandey, A. A. (2001). Emotional labor and burnout: comparing two perspectives of "people work". *Journal of Vocational Behaviour*, 1-23.

Brown, J. D. (1998). *The self*: McGraw-Hill.

Brown, R. B., & Brooks, I. (2002). Emotion at work: Identifying the emotional climate of night nursing. *Journal of Management in Medicine, 16*(5), 327-344.

Burbeck, R., Coomber, S., Robinson, S., & Todd, C. (2002). Occupational stress in consultants in accident and emergency medicine: a national survey of levels of stress at work *Emergency Medicine Journal, 19*(3), 234-238.

Burkitt, I. (1999). Modernity, self and embodiment *Bodies of thought: embodiment, identity & modernity* (pp. 136-163). London, Thousand Oaks, New Delhi: Sage Publications.

Burns, R. B. (2000). *Introducing research methods*. Frenchs Forest: Pearson Education Australia.

Cannon-Bowers, J. A., & Salas, E. (Eds.). (1998). *Making decisions under stress: implications for individual and team training* (1st ed.). Washington: American Psychological Association.

Charmaz, K. (2000). Grounded theory methodology: Objectivist and constructivist qualitative methods In N. K. Denzin & Y. Lincoln (Eds.), *Handbook of Qualitative Research* (2nd ed., pp. 509-535). Thousand Oaks, CA: Sage.

Cherniss, C. (1980). *Staff Burnout - Job Stress in the Human Services*. United States, CA: Thousand Oaks.

Cherniss, C. (1980b). *Staff burnout: Job stress in the human services*. Berverly Hills, CA: Sage.

Cherniss, C. (1981a). *Professional burnout in human service organizations*. New York: Praeger.

Commonwealth of Australia; Department of the Prime Minister and Cabinet, COAG. (2009). National Strategy for Disaster Resilience - Building our nation's resilience to disasters. Canberra: Council of Australian Governments.

Cotton, P. (2003). Special issue on occupational stress and wellbeing. *Australian Psychologist, 38*(2), 79-80. doi: 10.1080/00050060310001707067

Cox, T. (1993). *Cultural diversity in organizations: theory, research and practice*. San Francisco: Berret-Koehler.

Crean, S. (1997). Working nation and the the future of work in Australia. In P. James, W. Veit & S. Wrights (Eds.), *Work of the future: Global perspectives*. Sydney: Allen and Unwin.

Creswell, J. W. (1998). *Qualitative inquiry and research design: Choosing among five traditions*. Thousand Oaks, CA: Sage.

Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches* (3rd ed.). University of Nebraska, Lincoln: SAGE Publications, Inc.

Csikszentmihalyi, M. (1992). *The Psychology of Happiness*. London: Rider.

CSIRO, & BOM. (2010). State of the Climate (pp. 6): CSIRO, Australian Bureau of Meteorology.

Czarniawska, B. (1997). *Narrating the organization: dramas of institutional identity*. Chicago: University of Chicago Press.

Damasio, A. R. (2001). Emotion and the human brain Vol. 935, pp. 101-106.

Day, A. L., Sibley, A., Scott, N., Tallon, J. M., & Ackroyd-Stolarz, S. (2009). Workplace risks and stressors as predictors of burnout: The moderating impact of job control and team efficacy. *Canadian Journal of Applied Administrative Sciences, 26*, 7-22.

Denscombe, M. (1998). *The good research guide for small-scale social research projects* Buckingham: Open University Press.

Denzin, N., & Lincoln, Y. (Eds.). (1994). *Handbook of qualitative research*: SAGE Publications Inc.

Denzin, N. K., & Lincoln, Y. S. (Eds.). (2000). *Handbook of qualitative research* (2nd ed.). Thousand Oaks, CA: Sage.

Department of Homeland Security. (2008). National Incident Management Systems. Retrieved from doi:http://www.fema.gov/pdf/emergency/nims/NIMS_core.pdf

Edmondson, A. (1999). Psychological safety and learning behaviour in work teams. *Administrative Science Quarterly, 44*, 350-383.

Emergency Management Manual. (2003). Victoria: Office of the Emergency Services Commission.

Erez, A., & Isen, A. M. (2002). The influence of positive affect on the components of expectancy motivation. *Journal of Applied Psychology, 87*(6), 1055-1067.

Esplin, B., Gill, M., & Enright, N. (2003). Victorian bushfire inquiry into the 2002-3 Victorian bushfires. Melbourne.

Fetterman, D. (1989,). *Ethnography step by step,* : SAGE publications, Newbury Park.

Fineman, S. (2003). *Understanding Emotion at Work*. London: Sage.

Fisher, C. D., & Ashkanasy, N. M. (2000). Special issue on emotions in work life. *Journal of Organizational Behaviour, 21*(3).

Fisher, C. D., & Noble, C. S., (2004). A within-person examination of correlates of perfromance and emotions while working. *Human Performance, 17*(2), 145-168.

Fisher, D., Bell, S., Dierdorff, E , Belohalv (2012). Facet personality and surface-level diversity as team mental model antecedents: Implications for implicit coordination. *Journal of Applied Psychology, 97*(4), 825-841. doi: 10.1037/a0027851

Fisher, V., & Hanna, J. (1931). *The dissatisfied worker*. New York: Macmillian.

Fiske, S. T., & Taylor, C. R. (1991). *Social Cognition*. New York: McGraw Hill.

Flach, J. (1999). Beyond error: the language of coordination and stability. In E. Carterette & M. Friedman (Eds.), *Handbook of perception and cognition 2nd edition: human performance and ergonomics*. San Diego, London, Boston, New York: Academic Press.

Ford, A. (2002). *The need for volunteer emergency services to broaden their membership to meet community expectations*. Paper presented at the Australasian Fire Authorities Council Conference 2002, Australia.

Ford, S. (2004). Workplace stress: environmental and individual factors. *Australian Psychological Society, October*, 1-5.

Forgas, J. P. (Ed.). (2000). *Feeling and thinking: the role of affect in social cognition*. Cambridge Cambridge university press.

Forgas, J. P. & Williams, K. D. (Eds.). (2002). *The social self: cognitive, interpersonal, and group perspectives*. New York: Psychology Press.

Frijda, N. H., Manstead, A. S. R., & Bem, S. (Eds.). (2000). *Emotions and beliefs: How feelings influence thoughts* Cambridge: Cambridge Univerisity Press.

George, J. (2000). Emotions and leadership: the role of emotional intelligence. *Human Relations, 53*, 1027-1055.

George, J., & Brief, A. (1996). Motivational agendas in the workplace: The effects of feelings on focus of attention and work motivation. *Research in Organizational Behavior, 18*, 75-109.

Gevers, J., van Erven, P., de Maas, M., & de Jong, J. (2010). Effect of acute and chronic job demands on effective individual teamwork behaviour in medical emergencies. *Journal of Advanced Nursing 66*(7), 1573-1583. doi: 10.1111/j.1365-2648.2010.05314.x

Goetz, J. P., & LeCompte, M. D. (1984). *Ethnography and qualitative design in educational research*, : academic Press, Orlando.

Goffman, E. (1959). *The presentation of self in everyday life* (rev. ed.). New York: Doubleday.

Green, F., & Mcintosh, S. (2001). The intensification of work in Europe. *Labour Economics, 8*(2), 291-308.

Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. In N. K. D. a. Y. S. Lincoln (Ed.), *Handbook of qualitative research* (pp. 105–117). Thousand Oaks, CA: Sage.

Guba, E. G., & Lincoln, Y. S. (2000). Paradigmatic controversies, contradictions, and emerging confluences. In N. K. D. a. Y. S. Lincoln (Ed.), *Handbook of qualitative research* (2nd ed., pp. 163-188). Thousand Oaks, CA: Sage.

Gully, S. M., Incalcaterra, K. A., Joshi, A., & Beaubien, J. M. (2002). A meta-analysis of team-efficacy, potency, and performance: interdependence and level of analysis as moderators of observed relationships. *Journal of Applied Psychology, 87*(5), 819-832.

Guthrie, R., Ciccarelli, M., & Babic, A. (2010). Work-related stress in Australia: The effects of legislative interventions and the cost of treatment. *International journal of the Law and Psychiatry, 33*, 101-115.

Hackman, J., & Morris, C. (1975). Group tasks, group interaction processes, and performance effectiveness: A review and proposed integration. *Advances in experimental psychology, 8*, 45-99.

Hammersley, M., & Atkinson, P. (1995). *Ethnography principles in practice*, (2 ed.): Routledge, London.

Hartley, J. F. (1996). Intergroup relations in organizations. In M. A. West (Ed.), *Handbook of work group psychology*. London: John Wiley & Sons.

Helmreich, R. L. (2000). On error management: lessons from aviation. *British Medical Journal, 320*(7237), 781.

Hennessey, K., Lucas, C., Nicholls, N., Bathols, J., Suppiah, R., & Rickets, J. (2005). Climate change impacts on fire-weather in south-east Australia, Aspendale, Victoria: Commonwealth Scientific & Industrial Research Organisation.

Hennessy, K. J., Macadam, I., & Whetton, P. H. (2006). Climate change scenarios for initial assessment of risk in accordance with risk management guidance (pp. 36): CSIRO Marine and Atmospheric Research.

Heuze, J., Sarrazin, P., Masiero, M., Raimbault, N., & Thomas, J. P. (2006). The relationships of perceived motivational climate to cohesion and collective efficacy in elite female teams. *Journal of applied sport psychology 18*, 201-218. doi: 10.1080/10413200600830273

Heuzé, J. P., Raimbault, N., & Fontayne, P. (2006). Relationships between cohesion, collective efficacy and performance in professional basketball teams: An examination of mediating effects. *Journal of Sports Sciences, 24*(1), 59-68.

Holland, D. C., & Valsiner, J. (1988). Symbols, and Vygotsky's Developmental Psychology. *Ethos, 16*(3), 247-272.

Hoppock, R. (1935). Job Satisfaction. New York: Harper.

Hu, J., & Liden, R. (2011). Antecedents of Team Potency and Team Effectiveness: An Examination of Goal and Process Clarity and Servant

Leadership. *Journal of Applied Psychology, 96*(4), 851-862. doi: 10.1037/a0022465

Hughes, S. C., McCoy, C. E. E., Severe, G., & Johnston, J. H. (2011). Cultural influences on trust. In N. A. Stanton (Ed.), *Trust in military teams*. Farnham, UK: Ashgate Publishing Ltd.

Ilgen, D. R., Hollenbeck, J. R., Johnson, M., & Jundt, D. (2005). Teams in organizations: from input-process-output models to IMOI models. *Annual Review of Psychology, 56*, 517-543.

International, Q. (2006-2008). NVivo 7 Workbook.

Irvine, R., Kerridge, I., McPhee, J., & Freeman, S. (2002). Interprofessionalism and ethics:consensus or clash of cultures? *Journal of Interprofessioanl Care, 16*, 199-210.

Isaac, & Michael, W. B. (1987). *Handbook in research and evaluation,* (2nd ed.): EdITS, San Diego.

Isen, A. M. (2001). An influence of positive affect on decision making in complex situations: theoretical issues with practical implications. *Journal of Consumer Psychology, 11*(2), 75-85.

Isen, A. M., & Reeve, J. (2005). The influence of positive affect on intrinsic and extrinsic motivation: Facilitating enjoyment of play, responsibile work behaviour, and self-control. *Motivation and Emotion 29*(4), 297-325. doi: 10.1007/s11031-006-9019-8

Jaggar, A. (1989). Love and knowledge: emotion and feminist epistemology. In A. Jaggar & S. Bordo (Eds.), *Gender/Body/Knowledge: Feminist Reconstructions of Being and Knowing*. New Jersey: Rutgers University Press.

Janesick, V. (2000). The dance of qualitiative research design: Metaphor, methodolatory and meaning. In N. Denzin & Y. Lincoln (Eds.), *Strategies of qualitative inquiry*. Thousand Oaks: Sage Publications.

Janis, I. (1972). *Victims of groupthink*. Boston, MA: Houghton-Mifflin.

Jenkins, R. (2004). *Social identity* (2nd ed.). Oxon: Routledge.

Katz-navon, T. Y., & Erez, M., (2005). When collective efficacy and self-efficacy affect team performance. *Small Group Research, 36*(4), 437-465.

Kerr, R., Garvin, J., Heaton, N., & Boyle, E. (2006). Emotional intelligence and leadership effectiveness. *Leadership and Organization Development Journal, 27*(4), 265-279.

Keyton, J. (2005). *Communication and organizational culture: a key to understanding work experiences*. Thousand Oaks, California: Sage Publications.

Klein, G. (2004). *The Power of Intuition: How to use your gut feelings to make better decisions at work*: Currency.

Kowalski-Trakofler, K. M., & Vaught, C. (2003). Judgement and decision making under stress: an overview for emergency managers. *International Journal of Emergency Management, 1*(3), 278-289.

Kumar, R. (1999). *Research Methodology A step-by-step for beginners,* : Addison Wesley longman Australia Pty Ltd., Melbourne.

Kupers, W., & Weibler, J. (2008). Emotions in organisation: An integral perspective. *International Journal of Work Organisation and Emotion, 2*, 256-287.

Layder, D. (1993). *New strategies in social research: An introduction and guide*. Cambridge UK: Polity Press.

Lazarus, R., & Folkman, S. (1984). *Stress, Appraisal and Coping*. New York: Springer Publishing Company.

Lent, R. W., Schmidt, J., & Schmidt, L. (2005). Collective efficacy beliefs in student work teams: relation to self-efficacy, cohesion, and performance. *Journal of Vocational Behaviour, 68*, 73-84.

Levin, D. Z., Kurtzberg, T. R., Phillips, K. W., & Lount Jr., R. B. (2010). The role of affect in knowledge transfer. *American Psychologist, 14*(2), 123-142.

Leymann, H. (1989). Towards a new paradigm of learning in organizations. In H. Leymann & Kornbluh (Eds.), Socialization and learning at work: A new approach to the learning process in the workplace and society. Brookfield: Vermont: Gower.

Lipsig-Mumme, C. (1997). The politics of the new service economy. In P. James, W. F. Veit & S. Wrights (Eds.), *Work of the future: Global perspectives*. Sydney: Allen & Unwin.

Litwin, G. H., & Stringer, R. A., (1968). *Motivation and organizational climate*. Boston, MA: Harvard University.

Louis, M. (1986). An investigators guide to workplace culture. *Perspectives, 3*(5), 73-93.

Macky, K., & Boxall, P. (2008). High-involvement work processes, work intensification and employee well-being: A study of New Zealand worker experiences. *Asia Pacific Journal of Human Resources, 46*(1), 38-55. doi: 10.1177/1038411107086542.

Makitalo, J. (2005). *Work-related well-being in the transformation of nursing home work.* (Academic Dissertation), University of Oulu, Finland, Oulo.

Makitalo, J., & Launis, K. (1998). The Finnish work ability approach: a historical and conceptual analysis. *Tyoterveyslaakari, 16*(1), 42-46.

Malek, M., Mearns, K., & Flin, R. (2010). Stress and psychological well-being in UK and Malaysian fire fighters. *Cross Cultural Management: An*

International Journal 17(1), 1352-7606. doi: 10.1108/13527601011016907

Mark, R. (1996,). *Research made simple : A handbook for social workers,* : SAGE publications Inc., California.

Marks, M. A., Mathieu, J. E., & Zaccaro, S. J. (2001). A temporally based framework and taxonomy of team processes. *Acad. Manage. Rev., 26*, 356-376.

Markus, H., & Nurius, P. (1986). Possible Selves. *American Psychologist [PsycARTICLES], 41*(9), 954-954.

Martin, J. (1992). *Cultures in organizations: Three Perspectives*. New York: Oxford University Press.

Martin, J. (2002). *Cultures in organizations:Mapping the terrain*. Newbury Park, CA: Sage.

Maslach, C., & Jackson, S. E. (1981b). The measurement of experienced burnout. *Journal of Occupational Behaviour, 2*, 99-113.

Mathieu, J., Maynard, M. T., Rapp, T., & Gilson, L. (2008). Team effectiveness 1997-2007: a review of recent advancements and a glimpse into the future. *Journal of Management, 34*(3), 410-476.

McCarthy, J. C., Healey, P. G. T., Wright, P. C., & Harrison, M. D. (1997). Accountability of work activity in high-consequence work systems: human error in context. *International Journal of Human-Computer Studies, 47*, 735-766.

McColl-Kennedy, J. R., & Anderson, R. D. (2002). Impact of leadership style and emotions on subordinate performance. *Leadership Quarterly, 13*, 545-559.

McDowell, W. C., & Zhang, L. (2009). Mediating effects of potency of team cohesiveness and team innovation. *The journal of organizational leadership & business*(Summer), 1-11.

McLennan, J., Holgate, A. M., Omodei, M. M., & Wearing, A. J. (2005). *Decision making effectiveness in wildfire incident management teams.* Paper presented at the Seventh International NDM Conference, Amsterdam.

Mechanic, D. (1991). Adolescents at risk: new directions. *Journal of Adolescent Health, 12*, 638-643.

Medibank, P. (2008). The cost of workplace stress in Australia (pp. 1-12). Australia.

Merriam, S. (1998). *Case study research in education,* : Jossey-Bass Publishers,San Fransico.

Miles, M. B., & Huberman, M. A. (1994). *Qualitative data analysis 2nd Edition*. London: Sage.

Mohammed, S., & Dumville, B. C. (2001). Team mental models in a team knowledge framework: expanding theory and measurement across disciplinary boundaries. *Journal of Organizational Behaviour, 22,* 89-106.

Mohammed, S., Ferzandi, L., & Hamilton, K. (2010). Metaphor no more: A 15-year review of the team mental model construct. *Journal of Management, 36*, 876–910. doi: 10.1177/0149206309356804

Moodie, R., & Borthwick, C. (1999). Emotions at work. Focusing on the health of organisations and their employees. *Medical Journal of Australia, 170*(7), 296-297.

Neale, A. (1991). Work stress in emergency medical technicians. *Journal of Occupational Medicine, 33*(9), 991-997.

Neuman, L. W. (2010). *Social research methods: Qualitative and quantitative approaches: International edition* (7th ed.). USA: Pearson Higher Ed.

O'Donnell, M., (1995). Empowerment or enslavement?:lean production, immigrant womenand service work in public hospitals. *Labour and Industry, 6*(3), 73-94.

Oliver, L. W., Harman, J., Hoover, E., Hayes, S. M., & Pandhi, N. A. (1999). A quantitative integration of the military cohesion literature. *Military Psychology, 11*, 57-83.

O'Neil, H. F. J., Chung, G. K. W. K., & Brown, R. S. (1997). Use of networked simulations as a context to measure team competencies. In H. F. J. O'Neil (Ed.), *Workforce Readiness: Competencies and assessment* (pp. 411-452). Mahwah, New Jersey, London: Lawrence Erblaum Associates.

Orasanu, J. (1990). Shared mental models and crew decision making. Princeton, NJ: Princeton University, Cognitive Sciences Laboratory.

Orasanu, J., & Salas, E. (1993). Team decision making in complex environments. In G. A. Klein, J. Orasanu, R., Calderwood & C. E., Zsambok (Eds.), *Decision making in action: models and methods*. Norwood, NJ.: Ablex.

Ott, J. S. (1996). *Classic Readings in Organizational Behavior*. USA: Harcourt Brace & Company.

Owen, C. A. (2001). The role of organisational context in mediating workplace learning and performance. *Computers in Human Behavior, 17*, 597-614.

Owen, C. A. (2012). Multi-agency information flow and co-ordination: six case studies. prepared for DSE, Hobart: University of Tasmania.

Owen, C. A., & Williamson, J. (1994). *The development of 'learning cultures' in the workplace: Some phantoms, paradoxes and possibilities.* Paper presented at the the (Re) forming post-compulsory education and training – reconciliation and reconstruction, Brisbane.

Patton, M. Q. (2002). *Qualitative research & evaluation methods* (3 ed.). London: SAGE.

Pfaff, M. S., & McNeese, M. D. (2010). Effects of mood and stress on distributed team cognition. *Theoretical Issues in Ergonomics Science, 11*(4), 321-339.

Rappaport, J. (1987). Terms of empowerment/exemplars of prevention: toward a theory for community psychology. *American Journal of Community Psychology, 15*, 121-148. doi: 10.1007/BF00919275

Reed, K., Blunsdon, B., Blyton, P., & Dastmalchian. (2005). Introduction: perspectives on work-life balance. *Labour and Industry, 16*(2), 5-14.

Rentsch, J. R., & Klimoski, R. J. (2001). Why do 'great minds' think alike?: Antecedents of team member schema agreement. *Journal of Organizational Behaviour, 22*, 107-120.

Reus, T. H., & Liu, Y. (2009). Rhyme and Reason: Emotional Capability and the Performance of Knowledge-Intensive Work Groups. *Human Performance, 17*(2), 245-266.

Roethlisberger, F., & Dickson, W. (1939). *Management and the worker*. Cambridge, MA: Harvard University Press.

Roth, W.-M. (2004). *Emotions, motivation and identity in workplace mathematics and activity theory*. Paper presented at the International Seminar on Learning and Technology at Work, London.

Roth, W.-M. (2007). Emotion at work: a contribution to third-generation cultural-historical activity theory. *Mind, Culture, and Activity, 14*(1-2), 40-63.

Rubin, H., & Rubin, I. (1995,). *Qualitative Interviewing: The art of hearing data*: SAGE Publications Inc., California.

Rutledge, T., Stucky, E., Dollarhide, A., Shively, M., Jain, S., Wolfon, T., Dresselhaus, T. (2009). A real-time assessment of work stress in physicians and nurses. *Health Psychology, 28*(2), 194-200.

Ryan, G., & Bernard, H. (2000). Data management and analysis methods. In N. Denzin & Y. Lincoln (Eds.), *Handbook of qualitative research*. Thousand Oaks: Sage Publications.

Saari, L., & Judge, T. (2004). Employee attitudes and job satisfaction. *Human Resource Management, 43*(4), 395-407. doi: 10.1002/hrm.20032

Salas, E., Burke, C., Wilson-Donnelly, & Fowlkes, J. (2004). Promoting effective leadership within multi-cultural teams: an event-based approach. In D. Day, S. Zaccaro & S. Halpin (Eds.), *Leader Developement for Transforming Organization* (pp. 293-323). New Jersey: Lawrence Erlbaum Associates.

Salas, E., Burke, C. S., & Stagl, K. C. (2004). Developing teams and team leaders: strategies and principles. In D. V. Day, S. J. Zaccaro & S. M. Halpin (Eds.), *Leader development for transforming organizations: growing leaders for tomorrow* (pp. 325-355). Mahwah, NJ, London: Lawrence Erlbaum Associates.

Salas, E., Cannon-Bowers, J. A., & Johnston, J. H. (1998). Lessons learned from conducting the TADMUS program: balancing science, practice, and more. In J. A. Cannon-Bowers & E. Salas (Eds.), *Making decisions under stress* (pp. 409-413). Washington: American Psychological Association.

Salas, E., Rosen, M., Burke, C., & Nicholson, D. (2007). Markers for enhancing team cognition in complex environments: the power of team performance. *Aviation, Space, and Environmental Medicine, 78*(5), 77-85.

Savelsbergh, C., Heijden, B., & Poell, R. (2009). the development and empirical validation of multidimensional measurement instrument for team learning behaviours. *Small Group Research 40*(5), 578-607. doi: 10.1177/1046496409340055

Schaafstal, A., Johnston, J., & Oser, R. (2001). Training teams for emergency management. *Computers in Human Behaviour, 17*(5-6), 615-626.

Schaufeli, W. B., & Buunk, B. P. (1996). Professional burnout. In M. J. Schabracq, J. A. M. Winnubst & C. L. Cooper (Eds.), *Handbook of work and health psychology* (pp. 311-346). Chichester, England: John Wiley & Sons Ltd.

Schein, E. (1985). *Organizational culture and leadership*. San Francisco: Jossey-Bass.

Schneider, B., Ehrhart, M., & Macey, W. (2013). Organizational culture and climate. *Annual Review of Psychology, 64*, 361-388. doi: 10.1140/annurev-psych-113011-143809

Smith-Jentsch, K. A., Campbell, G. E., Milanovich, D. M., & Reynolds, A. M. (2001). Measuring teamwork mental models to support training needs assessment, development, and evaluation: two empirical studies. *Journal of Organizational Behaviour, 22*, 179-194.

Smith-Jentsch, K. A., Kraiger, K., Salas, E., & Cannon-Bowers, J. A. (1999). *Teamwork in the control tower: how does it differ from cockpit resource management?* Paper presented at the Tenth International Symposium on Aviation Psychology, Columbus, OH.

Spradley, J. P., & McCurdy, D. W. (1972). *The cultural experience: Ethnography in complex society*. Chicago, USA: Science Research Associates Inc.

Stokes, C. K., Lyons, J. B., & Schneider, T. R. (2011). The impact of mood on interpersonal trust: Implications of multicultural teams. In N. A. Stanton (Ed.), *Trust in military teams* (pp. 13-30). Farnham, UK: Ashgate Publishing Ltd.

Strauss, A., & Corbin, J. (1990). *Basics of qualitative research: Grouded theory procedures and techniques*. Newbury Park: Sage.

Sturdy, A. (2003). Knowing the unknowable? A discussion of methodological and theoretical issues in emotion research and organizational studies. *Organization, 10*(1), 81-105.

Tams, S. (2008). Constructing self-efficacy at work: a person-centered perspective. *Personnel Review, 37*(2), 165-183.

Tasa, K., Taggar, S., & Seijts, G. (2007). The development of collective efficacy in teams: A multilevel and longitudinal perspective. *Journal of Applied Psychology, 92*(1), 17-27.

Taylor, J., Blue, I., & Misan, G. (2001). Approach to sustainable primary health care service delivery for rural and remote South Australia. *Australian Journal Rural Health, 9*(February), 304-310.

Taynor, J., Klein, G., & Thordsen, M. (1990). Distributed decision making in wildland firefighting (pp. 1-40): US Army Research Insitute for the Behavioural & Social Sciences.

Teng, C., Chang, S., & Hsuk. (2009). Emotional stability of nurses: the impact on patient safety. *Journal of Advanced Nursing, 65*(10), 2088-2096.

Tesch, R. (1990). The mechanics of interpretational qualitative analysis. In R. Tesch (Ed.), *Qualitative research: analysis types & software tools* (pp. 113-127). New York: Falmer Press.

Thompson, P. (1989). *The nature of work: An introduction to debates on the labour process* (2nd ed.). London: Macmillan.

Thompson, P., & McHugh, D. (1991). *Work Organisations: A Critical Introduction*. London: Macmillian.

Tsai, W.-C., Chen, C.-C., & Liu, H.-L. (2007). Test of a model linking employee positive moods and task performance. *Journal of Applied Psychology, 92*(6), 1570-1583.

Tyler, M., Fairbrother, P., Chaplin, S., Mees, B., Phillips, R., & Toh, K. (2012). Gender matters: Applying a gendered analysis to bushfire research in Australia. In B. Mees, V. Gekara & B. Sheehy (Eds.), *The Working Papers in Sustainable Operations and Work* (Working Paper No. 3 ed., pp. 1-26). Melbourne: Centre for Sustainable Organisations and Work/RMIT and Bushfire CRC.

The Australian Consice Oxford Dictionary, (1987).Victoria, Australia: Oxford University Press.

Valsiner, J., & van der Veer, R. (2005). On the social nature of human cognition: an analysis of the shared intellectual roots of George Herbert Mead and Lev Vygotsky. In H. Daniels (Ed.), *An introduction to Vygotsky* (pp. 81-100). Hove, New York: Routledge.

van der Veer, R. (2001). The idea of units of analysis: Vygotsky's contribution. In S. Chaiklin (Ed.), *The theory and practice of cultural-historical psychology* (pp. 93-106). Aarhus: Aarhus University Press.

van Knippenberg, D., van Knippenberg, B., De Cremer, D., & Hogg, M. A. (2004). Leadership, self, and identity: a review and research agenda. *The Leadership Quarterly, 15*, 825-856.

van Manen, M. (1990). Human science. In M. van Manen (Ed.), *Researching lived experience: human science for an action sensitive pedagogy* (pp. 1-34). New York: Suny Press.

Vogus, T. J., & Sutcliffe, K. M. (2007). The impact of safety organizing, trusted leadership and care pathways on reported medication errors in hospital nursing units. *Medical Care, 45*(10), 997-1002.

Volpe, C. E., Cannon-Bowers, J. A., & Salas, E. (1996). The impact of cross-training on team functioning: an empirical investigation. *Human Factors, 38*(1), 87 (14).

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological functions*. Cambridge, MA: Harvard University Press.

Welton, M. (1991). *Towards development work: The workplace as a learning environment*. Geelong: Deakin University Press.

Williams, S. A., Wissing, M. P., Rothmann, S., & Temane, M. (2010). Self-efficacy, work, and psychological outcomes in a public service context. *Journal of Psychology in Africa, 20*(1), 43-52.

Zajonc, R. B. (1980). Feeling and thinking: Preferences need no inferences. *American Psychologist, 35*(2), 151-175. doi: 10.1037/0003-066x.35.2.151

Zuboff, S. (1988). *In the age of the smart machine: The future of work and power*. United States of America: Basic Books.

APPENDICES

APPENDIX 1: INFORMATION SHEET AND CONSENT FORM

University of Tasmania

Information sheet for Interviews: Project information sheet (01/06/2006)

TO ALL STAFF INVOLVED IN INCIDENT MANAGEMENT TEAMS

Project title

The role of individual and collective affect in fire incident management

Thank you for responding with interest in participating in interviews to better understand the role of affect in Incident Management Teams (IMT's). Some information on the study and the interview phase is outlined below.

Who is responsible for the investigation?

Chief Investigator:	Dr. Christine Owen, Senior Lecturer,
	University of Tasmania Faculty of Education
Telephone:	(03) 6226 2555
E-mail:	Christine.Owen@utas.edu.au
Other investigator:	Jan Douglas, PhD candidate,
	University of Tasmania, Faculty of Education
Telephone:	(03) 6226 7880
E-mail:	Jan.Douglas@utas.edu.au

Please contact Jan if you have any queries about the project.

What is the purpose of the research?

The research is being undertaken to assist the second investigator, Jan Douglas, to fulfil the requirements of a Doctor of Philosophy (PhD) Education Degree at the University of Tasmania. It is hoped that the research will make a significant contribution to understanding the way in which affect can enable or inhibit incident management work activity. The four main aims of the study are:

1 to examine the role of affect in fire and emergency management and to investigate the ways in which affect influences and is influenced by individual and collective work activity;
2 to provide a better understanding of incident management team members' affective states by exploring their collective experiences whilst engaged in Incident Management Teamwork;
3 to explore the organisational contexts within incident management to better understand the linkages between work groups, culture, identity and work activity;
4 to develop a model for Incident Management Teamwork that extends recent models and to make recommendations for improvement.

What are the likely benefits of the research for me and others?

We will be making a report on the collated data to agencies involved in the study, with recommendations for improvement. Although Management in the Agencies are not bound to implement any of our recommendations we would hope you may see some of the following benefits:

- improved strategies to enhance communication and short-term collaborations with others;
- improved flows of information between yourself and your co-workers; and,
- improved training initiatives to enhance the effectiveness of IMT work practices.

Why have I been chosen as a potential participant in this research?

The study is exploring the role of people's affective experiences in incident management work activity. This particular work activity was chosen because it represents numerous aspects of increasingly important features of high

consequence work environments. People, such as you, working in such domains are susceptible to being emotionally charged, particularly when the potential consequences are high. Given the complexity of and duration of the events it is also likely that you may be influenced by emotional exhaustion. Understanding the role of affect is, therefore, particularly important in your work domain and others similar to it. While the role of affect in fire and emergency incident management is very present it is not readily discussed and research has been minimal. As a valued employee who has experience in IMT work you are being offered a unique opportunity to take part in this important research. Participation is entirely voluntary, but I would hope you can see the benefits and will feel comfortable about participating.

What am I being asked to do?

We are asking if Jan might be able to interview you to gain your experience of being involved in an incident management team. We expect the interview to take between 30-60 minutes.

With your permission, Jan will audio-record your answers. We are particularly interested in what you think helps or hinders effective IMT operations and when you are involved in an IMT, how/when/why you interact with others and what factors affected your interactions and actions taken.

Participation is entirely voluntary, but if you choose to take part you will need to read and sign the consent form attached to this information sheet. You can ask Jan to stop the interview at any time.

Your agency is supporting this research so the interview can occur in work time. The interview will be conducted in a location of your own choosing. That is, it may occur in a private space in the workplace if you are comfortable with this, or in another location nominated by you. The interview may also be

conducted by telephone at a time nominated by you. If the interview is conducted by telephone, Jan will commence by asking you if you have read the information sheet, if you have any questions and if you have read the consent form, and are willing to give your verbal consent and to have the telephone interview recorded. If you answer yes to these questions, Jan will turn on the tape recorder and ask you to acknowledge formally that you have read the information sheet, the consent form and are willing under these circumstances to participate in the interview, knowing that the interview is being taped and that you can ask the tape to be turned off at any stage.

At a later stage Jan may want to speak with you again. If you are happy for us to follow up and ask you to participate in another interview at a later date, you can advise her on the consent form. The reason she may like to ask you more questions is twofold. First there may be something she has since learned and, therefore, would be interested in hearing your opinion on new information. Secondly, as the project proceeds the agency may adopt changes that may affect IMT work. Please note that, if you agree to a follow up interview (by giving Jan your contact details on a separate page attached to the consent form), you are not compelled to participate in a later interview if you do not wish to do so.

Are there any potential risks or discomforts to me?

We have thought carefully about what possible risks there might be for you and we have identified the following possible risks. We have also thought carefully about how we may protect you from those risks. The risks and the strategies we have developed to mitigate those risks are outlined below.

Legal risk

You may be at legal risk if you mentioned that you were responsible for sub-optimal performance which was linked to an adverse outcome and that this became publicly known.

How will this possible risk be minimised?

We will ensure that the date and time of your interview are not included when data is recorded. We will also ensure that no personal details will be recorded or linked to the interview. If there is anything said in the interview that could identify you, Jan will change it and make it generic rather than specific.

Psychological/social risk

You may feel scrutinised or coerced into taking part in the interview.
There is a potential social risk if we were to fail to fully protect your identity.

How will this possible risk be minimised?

Participation in the interview is entirely voluntary and you do not have to participate if you do not wish to do so. Management will now know whether you have participated or not.

We have identified ways to protect your identity, please see below.

Risk of harming professional standing

There is a risk to your professional standing and future career prospects if your manager/ supervisor learn that you discussed doing something wrong during the recorded interview.

How will this possible risk be minimised?

Management has been advised and understand that they will not have access to any raw interview data collected as part of this study. I will make sure that no identifying information is included in the interview transcript by ensuring that any discussion that could identify you in particular will be removed or changed. No-one other than the researchers indicated on this information sheet is authorised by the University ethics committee to have access to the interview recording.

Will I be identified?

No personal information will be sought, recorded or published. Only data that has been aggregated will be made available for publication and review. This process will also be time- delayed (that is, data that is at least 6 months old and collected/analysed from all the interviews) will be discussed.

How private is the information I give?

We are ethically required to store de-identified data for a minimum period of five years after the publication of the Thesis. All data will be stored in locked filing cabinets or as password protected files in a secure (locked) room at the University of Tasmania, Faculty of Education. When your data is no longer needed, electronic files will be erased and printed material shredded.

Can I withdraw if I wish?

Participation is entirely voluntary. Prior to taking part, you will be asked to sign the consent form accompanying this information sheet, and, should you decide to participate, you will be able to withdraw at any time during the interview without effect or explanation. However, from the time the interview is transcribed your data will not be available for withdrawal because we will have no way of telling which data is yours.

Has the research been approved by an ethics committee?

The project has received ethical approval from the Human Research Ethics Committee (Tasmania) Network which is constituted under the National Health and Medical Research Council. The committees under the HREC (Tasmania) Network use the *National Statement on Ethical Conduct in Research Involving Humans Guidelines* to inform their decisions.

Who should I contact if I have any ethical concerns about the project?

If you have any concerns of an ethical nature or complaints about the manner in which the project is conducted, you may contact the Executive Officer of the Human Research Ethics Committee (Tasmania) Network. The Executive Officer can direct you to the relevant Chair of the committee that reviewed the research.

Executive Officer: Amanda McAully (03) 6226 2763

How can I access the research results?

Jan is planning to present the main findings at various fire and emergency management conferences. You will not be able to receive a copy of your interview transcript. However, if you would like to receive a copy of the collated findings Jan would be happy to make them available to you. You will need to let Jan know if this is the case at the conclusion of the interview. A copy of the final Thesis, will be available at the University of Tasmania library should you wish to review the entire project.

What should I do now?

If you decide you would like to participate in an interview, can you please contact Jan either by email (Jan.Douglas@utas.edu.au) or by telephone (03)

62267880 to arrange a suitable time for the interview. The interview can either be by telephone or at a time convenient when she will be in your area.

Thank you for taking the time to read this Project Information Sheet. If you have any queries, either before or after the meeting, please contact Jan at any time.

Kind regards

……	……
Dr. Christine Owen	Ms. Jan Douglas
(Chief investigator)	(PhD candidate & investigator)
Telephone: (03) 6226 2555	Telephone: (03) 6226 7880
E-mail: Christine.Owen@utas.edu.au	E-mail: Jan.Douglas@utas.edu.au

University of Tasmania

Participation consent form for interviews for the project

The role of individual and collective affect in fire incident management

In volunteering to participate in the above project, I hereby acknowledge that:

1. I have read and understood the “Project Information Sheet” for this study.

2. The nature and possible effects of the study have been explained to me.

3. I understand that this phase of the study involves the following procedures:
   - An audio taped interview of approximately 45 minutes that will be transcribed and, once de-identified, form part of the collated findings.

4. I understand that only authorised personnel will have access to the audio-tape, and that, no unauthorised person, including myself, will be able to listen to the audiotape, and that the transcription made from the interview will be de-identified in the ways outlined in the information sheet.

5. I have read the Project Information Sheet and understand the risks involved in participating in this research. I understand that the risks identified are mitigated by the strategies outlined in the Project Information Sheet.

6. I understand that de-identified transcribed interview data will be stored securely at University of Tasmania premises for at least five years and will be destroyed when no longer required.

7. Any questions I have asked have been answered to my satisfaction.

8. I agree that research data gathered for the study may be published provided that I am not identifiable as a Participant.

9. I understand that my identity will be kept confidential and that any information I supply to the researcher will be used only for the purposes of the research.

10. I agree to participate in this investigation and understand that I may cease the observation or withdraw from the interview at any time. Whether or not I withdraw, I appreciate that I will not be able to withdraw or modify my data because the data will be de-identified.

Participant's name:

_____

Participant's signature:

_____

Date: _____

Statement by investigator:

I have explained this project and the implications of participation in it to this volunteer and I believe that the consent is informed and he/she understands the implications of participation.

Investigator's name:

_____

APPENDIX 2: SEMI STRUCTURED INTERVIEW QUESTIONS (AND TEAMWORK BEHAVIOURS LIST)

1 Can you tell me about your history of work experience? How long have you been with [organisation]?

2 How long have you been part of an Incident Management Team? What roles have you had? What does that role/position entail?

3 When you work on an IMT do you work with the same people? How often? How do you find it when you haven't worked with someone before? What helped and hindered your work with them? [probe for uses of technologies, rules/policies employed/cultures]

4 Think about the last IMT you participated in, can you give me an example of incident management that worked really well? What was it that happened? Can you give me an example of incident management that didn't work well? What was it that happened?

5 One of the things that has been found to be important in other research is "collective confidence". In terms of an incident that worked well, to what degree do you think the team itself had an enhanced sense of its own collective capability? Was this something you think might be present or not? If yes, what created it?

6 Have you ever been involved in a multi-agency IMT? What happened? [probe for sequence or narrative of activities]

7 Have you experienced any difficulties with communication/information flow between agencies in a multi-agency IMT? [e.g., different protocols, rules/policies, language, technology]

8 What do you enjoy most about your work? Why? What do you dislike most about your work? Why?

9 Is there something you'd like others to know/appreciate about the work you've just described that you think others aren't unaware of? How would this help? Is there something you'd like to know/appreciate more about the work that others do?

10 Here is a list of teamwork behaviours [show list]. Can you give me examples, if, any, of when you might have observed these kinds of behaviours occurring? [probe context]. Can you think of any cases, if any, of when these kinds of behaviours might have been needed but weren't in evidence? What would that have been?

Probe for possible impacts of:

Individual/group: Skills needed; understanding of respective roles; perceptions of level of understanding the other person.

Cultural: Professional or cultural barriers or enabling factors that influence collaborative activity (e.g., cultural in-groups/out-groups; informal language used; collectively held-values and beliefs).

Structural: Procedures enabling or constraining action; usefulness of technologies.

Note: Whenever respondents use the words command, control, coordination, strategy interviewer needs to ask for clarification (e.g.) what do you mean by the term….?

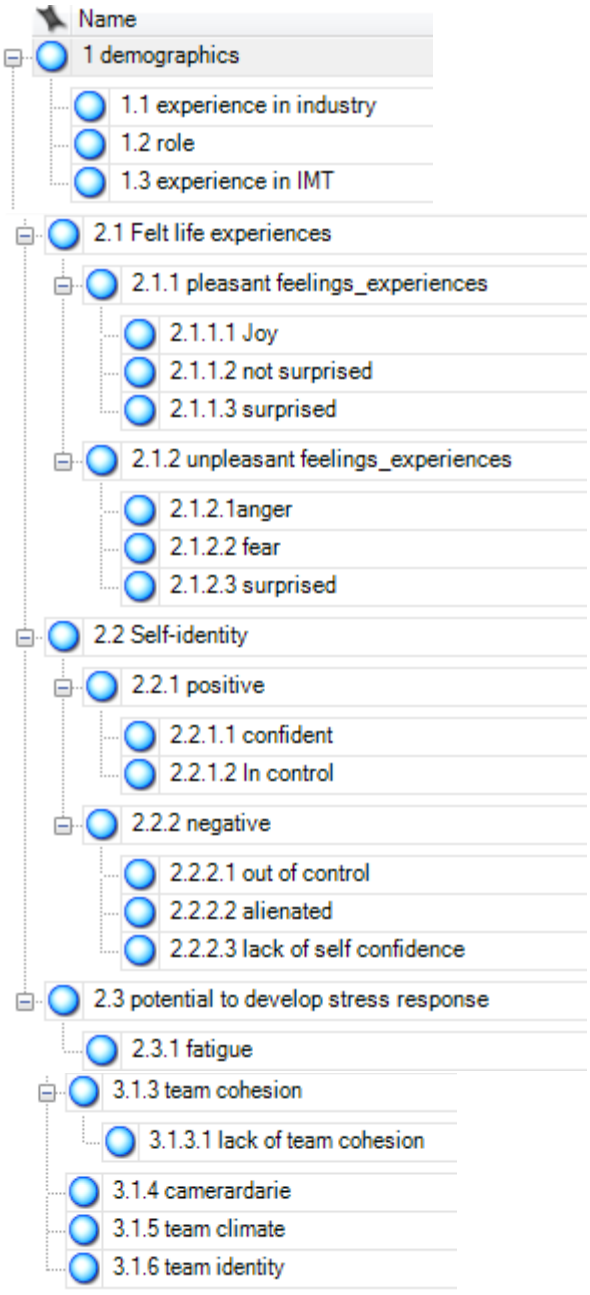
Teamwork behaviours

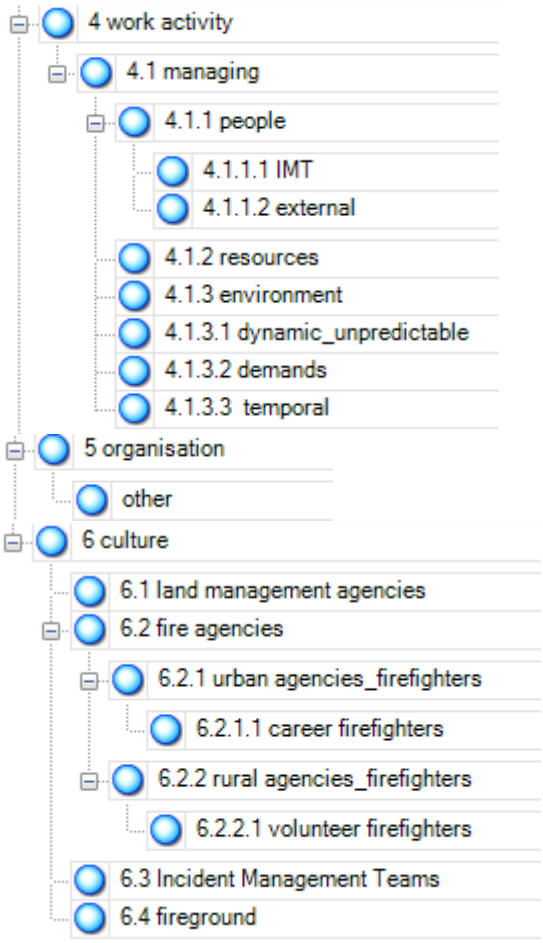
Information Exchange	Involves passing relevant data to team members who need it, in a timely manner. Includes transmitting and receiving. *Rationale* Effective information exchange helps members to build and maintain their own situation awareness as well as contribute to the teams understanding of the big picture.
Supporting behaviour	Offering and requesting assistance in an effective manner both within and across teams. *Rationale* Effective supporting behaviour allows teams to maintain a high level of performance in complex high workload situations.
(a) Requesting & accepting assistance	Monitoring oneself for signs and symptoms of stress. Requesting assistance before it's too late and graciously accepting assistance.
(b) Providing acceptance	Effectively begins with monitoring one's team mates for signs and symptoms of stress, once noted should offer assistance without being asked.
Flexibility	The ability and willingness to adapt performance strategies quickly and appropriately to changing task demands (inc monitoring for cues that a change in strategy is needed, identifying viable alternatives,

	objectively considering input from others, and compromising when needed. *Rationale* Effective flexibility allows a team to deal with the unexpected and provide consistently safe and efficient service.
Team feedback skills	The ability to enable team members to communicate their observations, concerns, suggestions and requests in a clear and direct manner without becoming hostile and defensive. *Rationale* With effective team feedback skills the team can correct and prevent errors, resolve conflict and continuously enhance performance.
Team-related knowledge	*Rationale* Helps team members know when and how to apply the above four teamwork skills.
(a) Teammate generic knowledge -Interpositional knowledge	Involves understanding the tasks performed by the other teams and team members with whom a member must coordinate (includes physical layout). *Rationale* Allows members to anticipate the information needs of others, support one another during high workload periods and avoid frustration and inter-team conflicts.
(b) Teammate specific knowledge	Information members learn about their individual teammates' characteristics
Team Attitudes	*Rationale* Team-related attitudes affect team members willingness to use effective teamwork skills
Teammate generic attitudes	Belief in the importance of teamwork and collective orientation—the opinion that teamwork skills are necessary to achieve the most effective and efficient performance. Collective orientation – view oneself as part of a larger system

Teammate specific attitudes	Important for collective efficacy, mutual trust and team cohesion. Collective efficacy – confidence in the technical abilities of individual teammates as well as the team's ability to coordinate and adapt to a rapidly changing situation.

APPENDIX 3: CODING SYSTEM (TREE NODES)




4 work activity
4.1 managing
4.1.1 people
4.1.1.1 IMT
4.1.1.2 external
4.1.2 resources
4.1.3 environment
4.1.3.1 dynamic_unpredictable
4.1.3.2 demands
4.1.3.3 temporal
5 organisation
other
6 culture
6.1 land management agencies
6.2 fire agencies
6.2.1 urban agencies_firefighters
6.2.1.1 career firefighters
6.2.2 rural agencies_firefighters
6.2.2.1 volunteer firefighters
6.3 Incident Management Teams
6.4 fireground

APPENDIX 4: EXAMPLE OF CODED DATA

2.3 POTENTIAL TO DEVELOP STRESS RESPONSE

<Internals\\CFA_01> - § 2 references coded [1.15% Coverage]

Reference 1 - 0.46% Coverage

There just didn't seem to be the relationship structures. I certainly believe I tried to communicate with others in the team where I think again the pressure coming on actually seemed to prevent the information flow.

Reference 2 - 0.69% Coverage

We're all about having people with competencies and the like, but when the chips are down we find that we haven't got a Situation Officer, this will do, they're putting someone into a position where they don't feel comfortable operating but out of the goodness of their heart they actually do it. We saw this with Safety Advisors

<Internals\\CFA_03> - § 1 reference coded [0.63% Coverage]

Reference 1 - 0.63% Coverage

There have been times, I would suspect, and probably when I've been on duty that nobody's noticed it and you'll sort of work out later and say, "Gee that particular unit was under the pump and done a good job, but gee they must have been struggling",

<Internals\\CFA_09> - § 1 reference coded [1.47% Coverage]

Reference 1 - 1.47% Coverage

The incident management team cell should be given the power and the flexibility to manage the incident in accordance with - like, everyone at that level should know what policy is, what the state direction is, and I don't think the coordination cell should be dictating how and what resources we're going to get or process. It was more about a process thing. We had some individuals in the (name of organisation) coordination cell trying to dictate the process of resourcing and I felt that that impacted on the incident management team and in some places we had resources pulled, like food and all those - you

know, the welfare stuff, which shouldn't happen and it's the one that destroys your incident management team.

<Internals\\DSE_01> - § 1 reference coded [1.30% Coverage]

Reference 1 - 1.30% Coverage

I Can you tell me a little bit more about that one, seeing as you've indicated that it was complex?

R Well, 2003 was incredibly complex but this one was complex in that it was heading towards (name of place) water catchment, and the political pressure was incredible on not letting it get there. Very steep, all hand trail work, a lot of minor injuries and exhaustion and things happening on line, very limited vehicle access, so water was an issue.

<Internals\\DSE_03> - § 1 reference coded [0.84% Coverage]

Reference 1 - 0.84% Coverage

Because once it becomes really busy you have to start looking for people that have worked with you and see you know how they change and if you know them and you know where is the point they will snap that's very important for some people given how they operate under pressure and they crack before you notice anything.

<Internals\\DSE_04> - § 1 reference coded [1.01% Coverage]

Reference 1 - 1.01% Coverage

I Sounds like a nightmare.

R Oh it wasn't too good. Actually it was interesting because we worked all day and we all got really dehydrated. We were actually not too flash by the end of it. It was very chaotic and the building we were in didn't actually have any water and you tended to not leave the job so you actually don't notice it, we just got dehydrated. We noticed it once we'd finished. And we actually got a lot more careful about that after that. By the end of the day we all had headaches.

<Internals\\DSE_05> - § 1 reference coded [0.45% Coverage]

Reference 1 - 0.45% Coverage

I try and always look for say what will free him up to do the job or take the pressure off him or things that are unforeseen that they mightn't foresee and also knit the picture together, knit the different arms of the units together

<Internals\\DSE_06> - § 1 reference coded [1.09% Coverage]

Reference 1 - 1.09% Coverage

If you do know their skills and you've worked with them before that can be really positive but also you can over estimate their ability, you don't always take into consideration how they're feeling at that shift or for that period of time, what else is going on in their life so in a sense you tend to over estimate their ability rather than be a bit conservative about the time it might take to do various tasks.

<Internals\\DSE_07> - § 1 reference coded [0.95% Coverage]

Reference 1 - 0.95% Coverage

It's easy to say, but – and sometimes you just have to be prepared to take some shit sometimes too, from maybe the incident controller or ops, because you can see these people are – there's lots of things going in their mind, in fact you find that their – it can be fairly stressful for them. I think a logistics officer can bring some calmness to the group as well. If you're fairly well prepared.

<Internals\\MFB_01> - § 2 references coded [1.36% Coverage]

Reference 1 - 0.57% Coverage

No, no. So things like getting this sort of building well and logistical; we're getting to a successful outcome and then not. That was quite traumatic. If affected quite a few people.

Reference 2 - 0.78% Coverage

Yeah and I mean … I suppose from a psychological point of view that … I mean you come across dead people all the time, car accidents and fires and things, but certain … well, you never know but certain incidents can provide that real whack. Critical.

<Internals\\MFB_08> - § 2 references coded [4.32% Coverage]

Reference 1 - 1.96% Coverage

I Okay, so in the team that's not working so well, you will have given the same responsibility to people, but they wouldn't have been able to cope with that? How does that work?

R In one that I have, where somebody else has been in charge and I've just been part of a <inaudible> team, and you end up being overloaded with work. Instead of "I want you to think about this" it becomes "Have you done this yet?" Have you done that?" It becomes a whole lot of thinking out loud processes, and you really don't get much of a chance to do any of it because, before you complete the first task, you're onto the third or fourth question being asked about it.

Reference 2 - 2.36% Coverage

R Yeah, and lots of pressure applied, implied pressure applied, not so much for me because I don't mind, I can handle that, but I observe others in the room. Lots of implied pressure; they're not quite sure when they end up with this, we'll call it a bucket full of tasks, they all appear to have been given with a sense of priority but you can only ever do one at a time, so which is priority number one and which is priority number ten? And where do all of the others fall in place, and then there's this pressure of "Is it being done yet?" "Have you done X?" "Well, I would have done it if you'd told me that twice first up, because I would have put that as priority number one and I wouldn't have put it down as priority eight, because you gave me these other seven previous tasks."

<Internals\\NSWRFS_03> - § 1 reference coded [4.70% Coverage]

Reference 1 - 4.70% Coverage

I From the research that we're doing, what do you think would be a valuable outcome that we might be able to feedback to your agency?

R We do ask our volunteer controllers to take on a huge amount of responsibility, but also accountability, and that is very stressful. You ask someone to be the planning officer for an incident which might affect 60,000 people, so for me to ask my planning officer to put together a plan that deals with that accurately on the day is a fairly stress thing.

I It's a big ask, isn't it?

R They're under high levels of stress, and we can burn out people very quickly. In a volunteer organisation that is death to us, because if the person says "I'm stressed, I don't think I'll next time because I just can't handle the stress". So we have to actually, we don't really recognise that all that well on the IMT level. It will take you another six hours to wind down to get to sleep. So fatigue is a big issue. Management of fatigue within IMT is very, very critical and tends to be brushed over a bit. The focus very much often is with the responder themselves in emergency services, and not the IMT teams that need to make it all happen. I think if your research gave support that there needs to be greater acknowledgment of that, and I suppose, preparational training for that, and gives us ways of how we can address that issues, we will have reinforced a very strong structural system of IMT. Because I think the structure is quite sound.

<Internals\\Parks_02> - § 2 references coded [2.69% Coverage]

Reference 1 - 0.88% Coverage

R When she hit that she just then exploded and so we didn't have many people there so I got the other helicopter up to start hitting it with the buckets. But having all those resources, we got them all to come up there. It was all hands on deck for a while. It jumped the road and then that put it totally to a spot we'd ignored, because concentrating with the weather conditions and everything.

Reference 2 - 1.81% Coverage

R You didn't have time. The whole place was running around. It worked alright. There might have been one house burnt down. The main bridge that connected the north and south end, it was a big wooden bridge burnt down. It turned out ok, but it could have gone the other way, there could have been a lot of other stuff happen. Normally you think of houses and that type of infrastructure, but because of the cattle industry on the eastern side of the island, all the majority of the pasture land over there was their resource. Surely they didn't want houses burning down or anything, but they didn't want that to burn because if it did, there was no feed for their cattle, and that was like $14million worth of feed sitting there ready to burn, and if it's gone then you can imagine trying to truck feed in.

<Internals\\QFRS_04> - § 1 reference coded [1.68% Coverage]

Reference 1 - 1.68% Coverage

R Depending on the situation. Take a wild fire or something like that, operations is very stressful and planning. Take (name of incident) for example, logistics was very stressful, there was a lot of people needing a lot of help all at once and then you order the stuff in and you can't get the stuff to them because they are 6 feet under water or you can't drive there you have to try and fly it in and so there is a lot more hoops to jump through to get the stuff there on time. And things like the whole of (name of place) had nothing to eat and we have to get 6,000 meals there overnight and where do you get that from? There is not a company in Australia that makes that many meals in one night shift.

<Internals\\QFRS_10> - § 1 reference coded [4.04% Coverage]

Reference 1 - 4.04% Coverage

I Yeah, ok, thanks for that. What about supporting behaviour, offering and requesting assistance to people?

R Yeah, I think that's an important thing. There's no doubt about the xxx, supporting behaviour is in the way you act or is it supporting in offering assistance?

I It can be both. It might actually be that you can see somebody who's getting a bit overloaded so you're checking whether they need some help or whether they'd like another resource

R That's an important one, a very important one. For an Incident Controller and an IMT its critical. Number one is, during an incident that angle when all the stresses are only a small distance away and to understand that people are under a great deal of stress and be able to adjust or support them on a needs basis – that's one of those softer skills that a Controller needs to be able to recognise that. Isn't it, the IE, the emotional intelligence of people? I think that is an important one. At the end of the day you're like a coach or a captain, you also have a number of senior operators who need those same sorts of skills to monitor their teams

<Internals\\QFRS_11> - § 1 reference coded [0.61% Coverage]

Reference 1 - 0.61% Coverage

R They would be ensuring that the rest of their team doesn't experience too much overload and when they do experience overload they'd be appointing more staff to ensure that their workload is balanced.

<Internals\\TFS_01> - § 2 references coded [4.70% Coverage]

Reference 1 - 3.23% Coverage

I Can you think about maybe a real life situation where you've been on an IMT and just give me some background as to what was happening?

R The (name of fires) we ran out of people pretty quick, because we were running 24 hour shifts. So we started to drag people that didn't necessarily have a good grounding in some of the functional areas and they may have felt out of their depth a little bit. And I think that could have caused problems for the incident controller.

I So it didn't, you're saying that it didn't?

R No not really, but it could have I think. There was some comments made later about people feeling out of their comfort zone and being thrown in the deep end, those sorts of comments, so I think it's <overtalk>.

Reference 2 - 1.47% Coverage

I Sure. Is there anything that you don't like about your work?

R Probably the stress I don't like that.

I What sort of things lead to stress?

R I think we've got a lot of things we want to achieve, but we just haven't got the resources to complete them, so that's one thing, which is no one's fault, it's just prioritising things.

<Internals\\TFS_04> - § 1 reference coded [2.54% Coverage]

Reference 1 - 2.54% Coverage

I So how do you go about resolving those sorts of conflicts when you're having trouble getting people to talk about and bring <overtalking>.

R <Overtalking> you're there and you start talking about it and working things out and things sort of just – eventually start to gel. Once you get to know the style and the feel - they get a feel for you, you get a feel for them and how things are going to sort of run, things start to actually calm down and the initial panic of trying to get things all set up and running and you get pressures from above trying to tell you "we need, we need, we need. What's going on? Come on. We want it by", you know want some ideas or this and that, well things start to work out, and admittedly because Tassie's a small place, after you've been to a couple of incidents or in a couple of IMT's, you start to find it's the same sort of people start rotating <overtalking>. So you start to see familiar faces which does help a lot.

<Internals\\TFS_05> - § 2 references coded [3.09% Coverage]

Reference 1 - 1.04% Coverage

I What sort of factors affect how people communicate as incidents are going along?

R Stress. You'll quite often see it with the planning officers, especially if you put a fire services bloke into a planning situation where he's not necessarily doing what he normally does, because normally he would just work on the run, documenting it all in his head, and adjust. Trying to put it down on paper, document it all, and look out there –

<Internals\\TFS_06> - § 2 references coded [2.75% Coverage]

Reference 1 - 0.85% Coverage

R So instead of trying to involve everybody in an IMT and everybody working ad hoc, it was rather crazy, it really was…then at least you've still got that chain of command and span of control, whereas before they were just working as a group of people. It was pretty hard. It was a hell of an experience.

Reference 2 - 1.90% Coverage

R With the other one where actually…the other style, there were a lot of very ladder-climbing type people, very ambitious, very aggressive type people that wanted the job done, and their planning was far beyond the capabilities of what was happening on the ground, and 'why can't you do this?', and she's push, push, push all the time. And what happened there was because the IMT was so powerful and so forceful and wanting things done, then there were burns on the ground because what they forgot to consider that they are volunteers that they are actually pushing pretty hard on the ground and these people got <inaudible> single digits that they could <inaudible> and go home.

3.1.2 TEAM EFFICACY

<Internals\\CFA_08> - § 1 reference coded [2.68% Coverage]

Reference 1 - 2.68% Coverage

I Now, some of the people that I've spoken with, and research indicates that it's important to have this collective team confidence, so have you experienced that when you've been in an incident management team, and what is it? Is it part of making the team run well and if it is, then how do you get around that in a situation that you were giving me then, like if you don't know these people, so put away personalities, but you also don't know how they operate?

R I think that that's formed pretty quickly in allocating tasks, and that focuses the team or the individuals on the tasks that they've got to do and, particularly if you create some expectation on when it's got to be delivered. That way, you eliminate the possibility for people to flip flop or move away from what it is that they should be concentrating on and looking at peripheral issues, and that is that, once they've done that and they know when to deliver, I think that builds a confidence in the person straight away, that the task you've set them has been delivered to the satisfaction that was expected, in a given time frame that was requested and, once that's done, then you very quickly build that trust up in the individual and I think you then focus on that individual as being there as a work based issue and not a social based issue.

<Internals\\CFA_09> - § 1 reference coded [4.63% Coverage]

Reference 1 - 4.63% Coverage

I So how do you think we might go about doing that or can you think of a time when you've been part of an incident management team - and it doesn't have to be multi-agency, it can be just with your agency - where things have gone well and you've thought, well, this is all about team cohesion, building that collective confidence - what's that about? I mean, because I've had conversations with people where they say it's all about having confidence in each other and we look at the research and that talks about that as being important. How do you know when that's happening?

R I think it's about acceptance of a person's ability. I reckon that's where our problem is, that where it works well is that I don't - I walk in and I say, "Jan, I know you've got these skills and I know that you can implement them and I give you the task or you just take on the task and it's done". Where it falls down is where you walk in the room and you go, "Jan, I've never met you before, I don't know what your skills are, I think I'll just isolate you or I'm not going to deal with you" or - you know, it's this protection thing around each other and you find that there's no discussion between groups. They're all working in their little silos because they don't understand the skills and experiences that an individual brings to the team. I think that's our number one issue that always impacts on our teams. It's a bit different if you've heard about someone and you've heard positive things about them and, you know, "That Jan, she's really good at doing that job" and Jan walks in the first time and you go up and shake her hand and say, "Okay, Jan, I've heard lots of good things about you". Well, I think where you break it down a bit, but the majority of people walk in the room and they don't each other and of course if you don't know someone you normally sway your task to people you do, or people just work in their little silo groups. We've got to find a way that's --

I So somehow there has to be an acceptance of --

R The skills that --

I -- okay, this person here is the planner, they've been given that role and so we have to allow that person to run with that and have the confidence in them.

<Internals\\DSE_09> - § 1 reference coded [2.34% Coverage]

Reference 1 - 2.34% Coverage

I Can you give me an example of - and it's really good if we can have a specific example of when you've been on an IMT and things have gone really well, the incident has been controlled and everybody is working together?

R Yeah, look, there was one, something, just one, I think it was a level 2 incident within Innes fire district, managed out of (name of place), and that seemed to run pretty well and it was a joint incident which, I thought, for a joint incident went smoothly, achieved the goals in the timeframes we set ourselves and the objectives that we set ourselves were also met. So from that point of view and, being a joint incident, I'd have to say it was a success.

<Internals\\MFB_07> - § 1 reference coded [2.60% Coverage]

Reference 1 - 2.60% Coverage

I When you're attending an incident and you're in your role as an incident commander, what sort of things assist you in that role? So, here, we'd be looking at things like; some of the rules, policies, cultures within your organisation, technology…

R I think, having people in those functional roles, that I'm confident who know how to do the job is terrific. People that don't know how to do those roles are almost a liability in that you're finding out you're going to have to do those sort of things yourself because they haven't got enough experience to be able to do those sort of things properly, and I think one of the reasons for that is we get less and less chances to utilise our IMT skills.

<Internals\\Parks_07> - § 1 reference coded [2.22% Coverage]

Reference 1 - 2.22% Coverage

I How important is that? Having the confidence not only in yourself but the people you work with on the team?

R Ultimately.

I And how do you gain that?

R Years of working with them I suppose. The more planning you do with them the more you see them in other circumstances, like the scenario we had on the wharf. I found - I was involved overnight on that one, and I found that really good because it was managed by (name of organisation) and it gave me a new insight into how they operated, but more importantly it just gave me more hours with people that I had worked with at (name of place) and people I had worked with down the (name of place) and just a slightly different scene where their skills were more on show, because it was their incident. I don't want that ownership thing to sound really important, but each agency does have its own culture, does have its own concerns, does have its own way of doing business and its skills and expertise, and the more you see some of the people you work with in their comfort zone, the more you see their depth and the more confidence you have in them.

<Internals\\name withheld> - § 1 reference coded [3.09% Coverage]

Reference 1 - 3.09% Coverage

I One of the things that we've found important in other research is collective confidence, so having the confidence within your team. How important is that to you, so knowing other people's capabilities and being confident in not only their knowledge but also how they work?

R Very important yes and I suppose the collective incompetency is an issue.

I Does that happen often?

R Yes I'm trying to say this in a very diplomatic way.

R The IT and state incident management team doesn't actually get to pick the members of the team so from time to time you do get members come through who are not only those people who you're not aware of and you don't have an intimate knowledge of their abilities but you also, you have people come through that you are aware of and you do have a

knowledge of their shortcomings and that's a bit of a worry. The organisation selects who becomes members of the team and sometimes that's done based on internal political needs and I talked about it before, the integration of urban and rural services is very important for the (name of position) and the number one criteria being put on the development or formation of the state incident management teams... So we get people whether we want them or not on our team rotating through the teams and there are times when their theoretical knowledge is quite good but their ability to operate at times is not what you would like to see and you have to re-manage that on the spot. You've got no other choice but to do that hopefully and so far to date I'm sure we've done that reasonably well.

<Internals\\TFS_02> - § 1 reference coded [2.12% Coverage]

Reference 1 - 2.12% Coverage

I So you just mentioned confident, so you need to be confident within yourself about the work that you do, plus you need to be confident in the people that you're working with?

R Yeah they need to be confident as well and it helps if you know each other, because if you go in with a new team it makes it very difficult. You don't know who's capable of what and you can give somebody a job they can't do or you can be under utilising somebody and that can have almost as bad effect. They can become almost counterproductive if you're not using them in the best position that they should be in or to the best of their abilities. So that knowledge of each other's ability and confidence in each other's ability breeds confidence within individuals and it just has a knock on effect.

<Internals\\TFS_03> - § 1 reference coded [0.50% Coverage]

Reference 1 - 0.50% Coverage

R I guess the way that the team, the IMT sort of came together and considered all our options and put strategies in place for what would happen if we did lose the fire on that occasion.

APPENDIX 5: EXAMPLE OF INCIDENT ACTION PLAN

Wildfire Thomson Valley

Incident Action Plan Summary

Incident Location: Yarram Fire District | Shift: Day | Day: Thursday | Date: 30 Jan 2009

Prepared by: Peter West, Planning Officer | Authorised by: (Sign), Incident Controller | Briefings every: 6 Hrs

Attachments:
- ☒ Map
- ☒ Organisation Chart
- ☒ Communications Chart
- ☒ Spot weather forecast

Situation (Details of incident, life and property at risk, location, weather, resource deployment)

A number of fires started in the area during 28/29 Jan and an IMT was established to manage these as a complex. These fires have developed into two main fires Dartmura and Delburn which are managed as two Divisions.

Dartmura has an estimated area of 250 hectares and Delburn 400 hectares. The two fires have burnt significant areas of Hancock plantations and have threatened private property assets and houses in vicinity of Boolarra, Dartmura and Mirboo North. At this point there have been no confirmed houses burnt, however the threat to houses will be high this shift and a key priority for fire fighters.

Weather for the shift will be high temperatures with winds starting in the NW and moving to the SW in the afternoon. RH will remain low all day.

Resources deployed consist of DSE, Hancock Plantations (HVP) and CFA. CFA is the control agency for this fire. A cross agency IMT has been established working from Traralgon

Variables	Forecast Thursday 0600	0900	1200	1500 - 0300
Temp (°)	28	34	41	42
R.H. (%)	57	28	18	14
Wind Speed (km/h)	15	20	20	20
Wind Direction	NW	NW	NW	SW

Mission (OBJECTIVE for Incident/Section/Division/Sector Specific, Measurable, Achievable, Relevant to policy, Time Framed)

To protect private property assets, minimise plantation losses and where practical back fire edge

Execution: Division	Sector	Strategies/Tactics (What, how, by when, where)	Work to do	Resources Agency	People: DSE	CFA	MW	Other	SES: DSE	CFA /MW	Other	Vehicles: DSE	CFA /MW	Other	Plant: DSE	MW	Other
Darlimura / Strzelecki Sector		• Contain fire Strzelecki Highway • Track Sensors, spotover	• Contain fire at Strzelecki Highway • Track spotover at Sanctons Track	CFA/DSE	6	28			3	5					4		
Darlimura / Dominy Road		• House protection • Plantation protection • Track edge		DSE/HVP	20			6	3	2							1
Darlimura / Basingarlin road		• Plantation protection • Track edge		DSE	32				16								
Darlimura / Southern sector		• Township protection • Asset protection • Track edge		CFA		58											2
Delburn / High Farm		• House protection • Plantation protection		CFA		28											1

CFA.010.001.0516

Industry and Investment NSW

INCIDENT ACTION PLAN

Be brief and concise with your entries

Location	Control Level	Operational Period
		From **To**

1.0 SITUATION Disease, community, environment PROMPTS: Weather, disease trends, Resources, Hazards & safety REFERENCE: Maps, weather reports, Sitreps, appreciation, warnings, alerts	CURRENT
	PREDICTED
2.0 OBJECTIVES (or MISSION) PROMPTS: Time & space REFERENCE: Appreciation – control options, courses open to disease	CURRENT
	ALTERNATE

3.0 EXECUTION add safety information as appropriate	
GENERAL OUTLINE PROMPTS: Strategies & tactics (current/proposed/alternate) REFERENCE: Appreciation, Control Options	
GROUPINGS	
TASKS Including PR & Media	
COORDINATING INSTRUCTIONS PROMPTS: Timings, routes, assembly areas, staging areas	

4.0 ADMINISTRATION (Logistics support) PROMPTS: Unit names, locations, contact names, phone no's, timings, duties/tasks, routes, suppliers, quantities, status (required, organised, stand by, enroute)	
SUPPLY WHO, WHAT, WHERE, WHEN of resources not readily available	
GROUND SUPPORT Transport of personnel, traffic mgt, refuelling, mechanical repair/maintenance	
COMMUNICATIONS Installation, maintenance, technical advice	
STAGING AREA/ FCP Setting up, communications, staffing	
5.0 ADMINISTRATION (Logistics services) PROMPTS: Unit names, locations, contact names, phone no's, timings, duties/tasks, routes, suppliers, quantities, status (required, organised, stand by, enroute)	

FACILITIES Security, waste, cleaning	
CATERING	
OH&S/MEDICAL Medical plan, first aid plan	
FINANCE	
TRAVEL	
INDUCTION/ TRAINING	
ACCOMMODATION	
6.0 CONTROL, COORDINATION & COMMUNICATION	
CONTROL &	

COORDINATION STRUCTURE REFERENCE Structural Chart	
COORDINATION & LIAISON Local knowledge, police, agency reps, emergency mgt reps	
COMMUNICATIONS PROMPTS Communications structure, operational comms plan, information mgt	